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# China Report

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No. 370

ALMANAC OF CHINA'S ECONOMY (1982)

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8 August 1983

## CHINA REPORT ECONOMIC AFFAIRS

No. 370

### ALMANAC OF CHINA'S ECONOMY (1982)

Beijing ZHONGGUO JINGJI NIANJIAN (1982) [ALMANAC OF CHINA'S ECONOMY (1982)] in Chinese 1982 pp 1-X 115

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COMPLETE THE TASK OF READJUSTMENT TO ACHIEVE A FUNDAMENTAL TURN FOR THE  
BETTER IN THE NATIONAL ECONOMY

Beijing ZONGGUO JINGJI NIANJIAN (1982) [ALMANAC OF CHINA'S ECONOMY (1982)]  
in Chinese 1982 pp IV 3-IV 8

[Article by Xue Muqiao [5641 2550 2890]]

[Text] While the task of national economic readjustment set in 1979 marked a major turn in our economic policy, the policy of a further readjustment adopted in 1981 marked a minor turn. The minor turn does not affect the major turn; it is a further implementation of the policy for a major turn.

With the exception of the readjustment period in 1961-1965, our national economic construction in many years from 1958 to 1978 was not carried out strictly according to the principle of seeking truth from facts, and we committed the "leftist" mistakes of failing to proceed from reality and of blindly striving for high speed in production and large-scale construction. Except for a few years, the rate of industrial growth was more than 10 percent; the development of heavy industry was excessive; and the ratio of accumulation to the national income was more than 30 percent, leading to an imbalance in our national economy. Because of the poor results of production and construction, the people's livelihood failed to make any progress for a long time.

At the 3d Plenary Session of the 11th Party Central Committee held in the winter of 1978 and at the Working Conference of the Party Central Committee held in the spring of 1979, the "leftist" mistakes in economic work of the past were repudiated and the policy of seeking truth from facts and proceeding from reality was adopted in economic construction. The rate of industrial growth was reduced from 13.5 percent in 1978 to 8 percent (actually held at 8.5 percent) in 1979, while the planned investment in capital construction was reduced from 45 billion to 36 billion yuan. At the same time, we raised the procurement prices for agricultural products, and 40 percent of the workers and staff members were promoted. (In 1977, 40 percent of them had already been promoted.) The ratio between accumulation and consumption in the national income was also revised. Since the reduction in capital construction began too late and the majority of economic workers were not yet ideologically adapted to the change in 1979, these measures were not quite effective. The total volume of unplanned investments actually reached 50 billion yuan, 2 billion yuan over 1978. The improvement of people's livelihood was far beyond

the original plan, resulting in a financial deficit of 17 billion yuan, an unprecedented event since the founding of the People's Republic. Thus we were forced to increase our currency issuance by more than 5 billion yuan, causing an increase in prices.

We further reduced the rate of our industrial growth and the scale of our capital construction in 1980. The industrial growth was planned at 6 percent but actually realized at 8.7 percent. Our planned investment in capital construction was reduced to 24 billion yuan. However, because of "eating from his own pot" in financial work and profit-sharing by enterprises, the localities and enterprises came to possess more funds. Although the planned construction was reduced slightly, the construction outside the plan was very greatly expanded and the investment involved totaled 54 billion yuan, an increase of 4 billion yuan over the previous year. The procurement prices for agricultural products continued to rise because the control over the increased prices was not strict enough. In the same year, the increased wages of the workers and staff members, who were promoted in the previous year, had to be paid retroactively, while more bonuses were paid out of the shared profits. That was how the increase in people's purchasing power exceeded the planned level. That year, we still had financial deficits. Thus the currency issuance was increased by more than 7 billion yuan, and commodity prices continued to rise. The main causes of the huge financial deficits in these 2 years were the failure to reduce accumulation, the overrapid increase in consumption, and the excess of accumulation funds (from the increase in capital construction investment and in overstocking of goods) and the consumption fund (from the increased income of workers and peasants and the increased institutional purchases) over the total national income. If this situation should continue, the huge financial deficits will certainly lead to currency inflation and price increase which will not be satisfactory to the people. In other words, despite the great achievements in the readjustment during 1979 and 1980, we have also encountered some new problems, and there were still some hidden dangers.

To change this situation, the working conference of the party Central Committee, held in late 1980, decided to further readjust the national economy. According to the decision, the total investments in inside-the-plan and outside-the-plan capital construction were reduced to 30 billion yuan (later increased by 8 billion yuan and actually reached 43.3 billion yuan); 7 billion yuan was borrowed from the localities out of their financial surplus; and treasury bonds totaling 4.8 billion yuan were to be bought by the enterprises. At the same time, bank credit was reduced. To carry out the policy of a further readjustment, the state planned to reduce the rate of industrial growth to 3 percent (actually realized at 4 percent) and at the same time curtail all financial expenditures including military expenditures so as to cut the deficits down to 2.5 billion yuan. This should be acclaimed as a great success and a testimony to the great might of the socialist system of planned economy. We still had to increase the issuance of currency that year, but this increase was mainly intended for the increased procurement of increased industrial and agricultural output. The issuance of currency that year was much less than in the 2 previous years. It must be pointed out that since the amount of currency in circulation was still excessive, the commodity

prices last year could only be basically, but not completely, stable, and people still had their worry about the continued rise in commodity prices. The hidden dangers were not completely removed. Aside from the small financial deficits, a more important cause of the difficulty in achieving a complete stability of prices was that the increase in people's purchasing power was still excessive for the state plan, and that the increased prices and negotiated prices for agricultural products and the bonuses and subsidies for workers continued to increase. The people's standard of living had indeed been raised, and this marked a great triumph to the 3 years of readjustment. However, because of the continued rise in commodity prices, living conditions were still difficult for people with little or no increase in income. In the future, we must strictly control that portion of increase in people's purchasing power which is excessive for the plan so as to avoid the continued increase in prices.

We call the economic work in 1981 a minor turn not only because of the state's determination to reduce the scale of capital and the other expenditures even at the sacrifice of the rate of industrial growth, but also because of the abrupt halt in the investment in the inside-the-plan and especially in the outside-the-plan projects. During that year, industrial growth took the shape of a "curve." To reduce outside-the-plan investments, the state temporarily froze the funds of many enterprises in the banks during the first quarter of the year besides borrowing from the localities and issuing treasury bonds to the enterprises. The banks also tightened their credit grants. This abrupt halt was necessary; otherwise, it would be impossible to reduce the outside-the-plan investments. However, these measures also brought some difficulty to production and circulation. In the first quarter of the year, industrial production was slightly below that of the same period in the previous year. Then in the second quarter, when the State Council defroze the bank balances of the enterprises and the banks were more liberal with the grant of credit, industrial production began to increase. In the fourth quarter, many enterprises made a special effort to complete their plans for output value and for profit delivery resulting in a rapid increase in production. In some localities, the enterprises produced many unwanted goods in their blind pursuit for more output value. The following table shows the state of industrial growth in all four quarters of last year:

	<u>Total industrial output value (percent)</u>	<u>Light industry (percent)</u>	<u>Heavy industry (percent)</u>
Annual total	4.1	14.1	-4.7
First quarter	-0.2	9.9	-8.7
Second quarter	1.7	13.1	-7.8
Third quarter	3.1	14.0	-6.4
Fourth quarter	12.0	20.4	4.5

The changes in industrial production last year, as shown in this table, are not normal at all, and there were many discussions on this subject in the first half year. As I understand, some comrades doubted whether the readjustment had been overhasty in view of the continued decline in industrial



production in its wake. There were also many such discussions abroad. Some comrades who saw the decline by a wide margin instead of any increase in heavy industrial production wondered whether this was the result of a violation of the law of priority for the increase in the production of capital goods and whether this violation might affect the future rate of growth of our national economy. All these misgivings were mainly attributed to the lack of a concrete analysis of the actual conditions of our national economy. To dispel these misgivings, let us conduct some simple analysis as follows.

In the majority of the past 30 years, we were blindly striving for high speed in production and neglecting the economic results. In industrial production, a fairly large portion of our products were of inferior quality and unsuited to the market demand with the result that they became overstocked and had finally to be disposed of at cut prices or to be simply written off. This rate of growth was evidently unrealistic or highly fictitious. In 1979 and 1980, we decided to reduce the rate of industrial growth. The situation was slightly, but not basically, changed. Last year, we again decided to reduce the capital construction investment. This decision also sharply reduced the demand for the means of production, particularly machinery equipment. Many machinery plants had to operate under capacity and the iron and steel industrial output had to be slightly reduced. Furthermore, because of the need to increase the output of coal and petroleum in the past several years, tunneling in the coal mines and the work of prospecting for petroleum failed to keep pace with the production. To change these conditions, we had to reduce the output slightly last year and thus affected the rate of increase in industry entirely. Such a situation is hardly avoidable during the readjustment, and in the next several years, there will not be any spectacular increase in the heavy industry.

Apart from the objective causes, there are also some subjective causes for the curve-shaped development of industrial production. The abrupt halt in investment and in the grant of credit was necessary; however, it was a serious handicap to the increase in production. This situation was discovered by the State Council and beginning the second quarter of the year, the grant of credit became more liberal and production steadily increased. At that time, many people were not mentally prepared to meet the new situation and were in a passive position in their work. In the second and third quarters, their work gradually improved, but in the fourth quarter, there were early signs of the blind quest for output value as shown by the production of a great deal of slow-selling goods. The rate of increase in industrial output was 12 percent during this quarter. This was good news on the one hand and a cause for concern on the other, because of the possibility of committing the mistake of causing real harm in the quest for undeserved reputation. That was why Comrade Zhao Ziyang pointed out at the recent national conference on industry and transportation that the danger in the current year did not lie in the problem of speed but rather in the lack of attention to economic results. Therefore, it is now necessary to set right the guiding thought for industrial production, and instead of blindly striving for output value and speed, we should stress economic results. We must make every effort to produce more fine-quality and fast-selling goods with minimum consumption in order that our industrial production can be maintained at a steady rate with better economic results.

In the long-term development of the national economy, priority for the growth of heavy industry conforms to the objective laws. However, if the heavy industry develops too rapidly and agriculture and light industry fail to catch up with it, there will be an imbalance in the national economy. For many years, we have attached too much importance to heavy industrial development and set unrealistically high targets for steel output. Production in other branches of the heavy industry had also to keep pace with the steel output and consequently, the capital construction front became overextended. To meet the requirements of construction on an excessive scale, the machinery industry also developed too fast, especially for the purpose of serving the newly built heavy industry. In the past several years, the output value of the machinery industry amounted to approximately one quarter of the total industrial output value. Because of the reduction in the scale of capital construction and, at the same time, the excessive importation of mechanical equipment from abroad, there was a sharp drop in the production task for the machinery industry, and many plants were compelled to reduce their output. In fact, this reflects the somewhat excessive productive capacity in our machinery industry, although the excess was not too serious. If the orientation of service of our machinery industry is so changed that it will serve agriculture and particularly light industry instead of serving heavy industry itself, and will serve equipment renovation and technical transformation for the old enterprises instead of serving the newly built enterprises, there will be a promising future for our machinery industry. Now we already have more than 300,000 plants. For many years, we only paid attention to the newly-built plants and did not attend to the renovation and transformation of the old ones. As a result, many plants are now using outdated mechanical equipment even though it is not in good operating condition. If we will select several hundreds, several thousands or even several tens of thousands of plants for their mechanical equipment to be gradually renovated and transformed, then our machinery plants will not have to worry about operating under capacity, and there will be a good opportunity for their future development. To raise the technological level of the entire industry, the machinery industry itself should also be renovated and transformed. The plants should also be merged or reorganized in accordance with the principle of specialization and cooperation. Such a change will necessarily take several years, and the present temporary retreat is unavoidable. However, there is a very bright future.

A handicap to the rapid development of industry is the problem of energy shortage. In the next several years, our coal and petroleum industry will generally be maintained at the present level, and no big development can be expected. Although we are making maximum use of domestic and foreign funds to promote energy construction, it will still take 5 or 6 years for such construction to produce results. We have very abundant coal and petroleum resources; however, we need heavy investments and long construction periods for their exploitation. In the next several years, our industrial growth cannot rely solely on the increase of energy resources, but rather on our energy conservation. There is great potential for our energy conservation. For many years, we neglected energy conservation because of our abundant resources, and the waste was particularly serious. For the same quantity of products, our energy consumption is three times that of the developed

capitalist countries and four times that of Japan which is also short of energy. In 1973 and 1974 when oil prices had skyrocketed, all capitalist countries made great efforts in energy, particularly oil, conservation. Oil imports have continued to decrease in the past several years among the capitalist countries, and since last year, there have been signs of supply exceeding demand and demands for reduction of oil prices. Japan is short of coal and oil resources. In the past 2 years, its oil imports were reduced by approximately 10 percent each year, but its industrial growth was still maintained at a rate of approximately 5 percent. We have full confidence in our ability to match Japan in increasing output through energy conservation.

Apart from energy supply, communications and transportation are also inadequate for the needs to increase production, and in many areas, the coal from increased output cannot be transported out. That was why we had to use our hard earned money from both domestic and foreign resources in building railways and harbors and in setting up navigation and communications facilities. Although we now have ample foreign funds to be utilized, our infrastructure, technology and management are lagging behind. To accelerate the modernization of our national economy, we must build a solid foundation for it by solving the problem of internal imbalance in the heavy industry.

The imbalance of our national economy is not only confined inside the heavy industry. More important still, there is the imbalance among agriculture and light and heavy industries. In the past several years, the development of agricultural and light industrial production was very rapid. However, the increase in people's purchasing power was even more rapid, the production of consumer goods still failed to meet the requirements for the improvement of people's livelihood. The ultimate goal of socialist economy is to satisfy the daily increasing needs in people's daily life. Since for many years heavy industry was overdeveloped and the investment in agriculture and light industry was too little, there has long been no marked improvement of people's livelihood. Since the 3d Plenary Session of the 11th Party Central Committee, the development of agriculture and particularly light industry has markedly surpassed that of heavy industry, so that the people's livelihood could be rapidly improved. This is entirely necessary as a means of readjusting the imbalance in the national economy. To clarify this situation, the proportionate relationship between agriculture, light industry and heavy industry in several crucial years of the past is shown below for reference:

<u>Year</u>	<u>Agriculture (percent)</u>	<u>Light industry (percent)</u>	<u>Heavy industry (percent)</u>
1957	43.3	31.2	25.5
1960	21.8	26.1	52.1
1965	37.3	32.3	30.4
1978	27.8	31.1	41.1
1980	30.0	32.9	37.1

These figures show that the proportionate relationship was very abnormal in 1960, fairly rational in 1965, again abnormal in 1978, and a little better but still in need of further readjustment in 1980. In 1981, the light industry developed very rapidly, and its ratio to the total industrial output value surpassed that of heavy industry. This was necessary for meeting market demands. However, the decline in heavy industry, which has already been excessive, must be stopped, or even reversed, this year. We should be able to do this, according to our estimate. In the next several years, there will still be a rise in the ratio of light industry with a corresponding drop in heavy industry. Then in another several years, along with the large-scale renovation and transformation of old enterprises, the heavy industry will develop more rapidly, and by the 1990's, may even overtake light industry. The readjustment of proportionate relationship between agriculture, light industry and heavy industry in the past 3 years by no means violated the objective economic law; on the contrary, it was consistent with the objective laws of proportionate development of the various sectors of the national economy.

The readjustment of our national economy in the past 3 years has shown outstanding achievement. The serious imbalance has ended in our national economy which has now embarked on the road of healthy development. However, the task of readjustment has not been accomplished yet, and that is why we cannot claim that our national economy has taken a basic turn for the better. In his report, at the National Conference on Industry and Transportation, Comrade Zhao Ziyang pointed out that the key to a basic turn for the better in finance and economy is to focus all economic work on the attainment of better economic results. The problem of economic results concerns many fields, but in the final analysis, we should rely on the readjustment of the economic structure and reforming the economic system for its solution. In accordance with the spirit of Comrade Zhao Ziyang's report, I believe that the following jobs should be carefully attended to in striving for a basic turn for the better in our national economy.

First, we should continue to readjust the proportionate relationships among various sectors of the national economy. At present, we should continue to develop agriculture and light industry, vigorously promote the production of consumer goods, improve the quality of products and increase the varieties and designs. Along with the gradual rise in the people's standard of living, we should trial produce and promote the production of new products and restore many types of minor traditional commodities. Planned guidance should be strengthened, and efforts should be made to adapt the products to market demands so as to avoid blind production and duplicate construction. At the same time, construction in energy and transportation should be stepped up, with particular emphasis on energy conservation in the near future. Therefore, technical transformation should be conducted among those plants which are wasteful in energy. If necessary, these plants should be closed or retooled for other lines of production. The service orientation of machinery industry should be changed, and the plants should be merged or reorganized in accordance with the principle of specialization and cooperation.

Although we have done about enough in reducing capital construction investments, the capital construction front is still very long and its economic

results are poor. Therefore, the projects of new construction or expansion should still be strictly controlled. Strict control is particularly necessary over local industry, while the renovation and transformation of old plants should also proceed gradually in a planned way. The present ratio of accumulation is still too high (at 29 percent) mainly because of the continued increase in overstocking and the excessive circulating funds used by the enterprises. At present, there is the particular need to clear away the stockpiles of steel materials and mechanical and electrical products, and the commercial and foreign trade departments should also carefully attend to their goods in stock. Besides clearing up the old stockpiles, they should be even more careful in guarding against new stockpiles. The ruling that commercial departments should not procure unsaleable goods and that the bank should not grant credit for their production must be strictly enforced. If we can reduce the value of our overstocked goods by 10 billion yuan each year, the accumulation rate will be lowered by 3 percent.

Second, we must strive for a balance in payments and receipts, control the issuance of currency and insure the stability of market prices. One of the important causes of our financial deficits in the past 3 years was the lack of strict control in the state plan over the increases in accumulation and consumption funds. In the first 2 years, we failed to reduce the accumulation funds while the increase in our consumption funds exceeded the original plan. Last year, the accumulation funds were slightly reduced, but the consumption funds, after 2 years of excessive increase, continued its growth. The increase in these funds still surpassed the increase in national income. Our people's livelihood should be improved every year, but such improvement should be within our capability. Comrade Chen Yun recently pointed out that a cardinal policy in our economic work is first, to feed a billion people and second, to carry out socialist construction; and that the people's food cannot be too bad or too good, because, if it is too good, there will be no resources left for construction.

It must be admitted that our procurement prices for agricultural products have been too low and that there was a scissor difference between industrial and agricultural products. The fairly large-scale increase in the procurement prices for agricultural products was necessary and did help in the increase in agricultural output in the past several years. However, the increase in prices for above-quota procurement was a little too much, and the scope of this increase was later expanded to include other crops. Many localities have lowered the base quota of procurement as a means to increase their above-quota rewards with the result that the prices for agricultural products rose above the originally planned level. In the past 2 years, the margin of increase in procurement prices was not large, but the proportion of increased prices for above-quota procurement and procurement at negotiated prices has continued to increase, thus increasing the state's outlay by some 20 billion yuan. To protect the workers' livelihood after the increase in the procurement prices for agricultural products, the selling prices of agricultural products and those industrial products made of agricultural raw materials remained basically unchanged. (In 1979, the workers were subsidized for the increase in the selling prices of meat and eggs.) Now these price subsidies have cost the state approximately 20 billion yuan. With the

addition of price subsidies for the imports of grain, cotton, sugar and chemical fertilizers, the total amount has exceeded 30 billion yuan. This was one of the important causes of the huge financial deficits in the past several years. In the future, the procurement prices for agricultural products must remain unchanged for several years, while the scope of increased prices for above-quota procurement and of procurement at negotiated prices must be strictly restricted. The improvement of peasants' livelihood should mainly depend on their increased output, but not on further increase in procurement prices.

Another important cause of financial deficits was that the increase in wages (including bonuses) also exceeded the prepared plan. This increase was, on the other hand, caused by the indiscriminate payment of bonuses and various unplanned subsidies in many enterprises. According to the calculations of the State Statistical Bureau, the bonuses paid last year totaled 7.8 billion yuan, several times the amount to be used on wage increase according to plan. Bonus is originally intended for rewarding a small number of workers who have made spectacular contributions. However, many bonuses are now awarded on an egalitarian basis and cannot provide any incentive for advanced workers. On the contrary, it has been the cause of uneven distribution of benefits among different enterprises. Since the excessive payment of bonuses stimulated the increase in prices, we were compelled to subsidize the government workers not entitled to bonuses. Thus the increase in bonuses and the rise in prices formed a vicious cycle which brought about an increase in production costs and a decrease in the profits of enterprises. It was hard to eliminate the financial deficits.

Of course, the main way to eliminate financial deficits is to improve the economic results of production. However, the distribution of national income among the state, the collective and the individuals which was not quite rational during the past 3 years should also deserve our attention. In these 3 years, the bank deposits of enterprises and the savings deposits of the urban and rural population have increased by a wide margin, and the average increase in these two types of deposits was approximately 10 billion yuan each year. However, the financial revenues were decreased every year. The ratio of financial revenues to the national income was formerly approximately 1:3, but last year, it dropped to only 26 percent, which was far below those of the Soviet Union and the East European countries, and even below those of capitalist countries (more than 30 percent), and the downward tendency is still continuing. This point must be carefully studied. If we cannot eliminate the financial deficits in the next few years, it will be difficult to prevent currency inflation and the increase in prices, and the so-called hidden dangers cannot be basically eliminated.

Third, we must readjust the structure of industrial enterprises and complete the technical transformation of the national economy. We have now more than 300,000 industrial enterprises in the cities and millions of commune-run and production brigade-run enterprises in the countryside. All these enterprises were set up along trade lines or according to administrative zones, and the phenomenon of each going its own way resulting in serious duplication and waste was quite prevalent. This situation must be rectified in the future.

The union between different trades and different areas must be strengthened, and a fairly large number of enterprises should be merged or reorganized in accordance with the principle of specialization and cooperation. Those producing goods of inferior quality or wasting energy and raw materials should be closed, suspended, merged or retooled so that a rational structure of enterprises and a logical industrial layout can be achieved. It is necessary to bring into play the initiative of the localities, but we must guard against any rash action in building new plants or in any construction project which may cause duplication and waste. There should be division of work and cooperation between the industrial cities and the raw material producing areas and each party should be encouraged to display their strong points. In matters of price, tax and profit, the interests of both parties should be considered. In the future, the small town and the vast countryside should be developed with the large- and medium-size cities as the core, so as to form an economic structure in the form of a network which will gradually replace the present system of management characterized by a segregation between the central and the local governments. The advanced coastal areas should be encouraged to invest in, and to form joint ventures with the backward inland areas so as to strengthen the economic ties between different areas and to gradually eliminate the regional differences.

As already mentioned, we have tens of thousands of old plants. The overwhelming majority of them are using obsolete mechanical equipment, and some of them are operating under serious handicaps. The waste of energy and raw materials is very serious, and the quality of their products is very poor. To improve the economic results, we must carry out equipment renovation and technical transformation in a planned and systematic way among these old plants. This is also an important way to bring about a basic turn for the better in our national economy. For 30 years, many products have not been upgraded, and some trades have even abandoned their originally fine products. In the future, we must step up the study and trial manufacture of new products and sell fine-quality goods at good prices. At the same time, of course, we have to improve the operation and management of enterprises, strengthen economic accounting and speed up the turnover of goods and funds.

Fourth, we must reform the system of economic management gradually and systematically. Essentially, socialist economy means planned economy, in which commodity production and commodity exchange still exist, on the basis of the public ownership of the means of production. The state's centralized leadership should be strengthened over the economic activities with a bearing on the national income and the people's livelihood. However, because of the widespread existence of commodity production and commodity exchange, we should bring into play the subsidiary role of market regulation while firmly upholding the socialist planned economy. In formulating and implementing its plans, the state should also fully consider the law of value. In other words, while using the administrative methods, or using price policies, tax policies and credit policies as economic levers to insure the smooth accomplishment of state plans. The use of economic levers to accomplish state plans is different from the use of the market's regulative role; it is in line with the principle which must be adopted in planned regulation.

Only free production within the scope permitted by state plans and the production and exchange of products under the spontaneous regulation of the law of value and in the absence of state-set prices belong to the realm of market regulation.

China is a large country with a population of 1 billion and having over 1 million enterprises (including those engaging in transportation, commerce and the service trade). The control by the central authorities should not be overrigid. In the past 3 years, we appropriately expanded the decisionmaking power of the localities and enterprises. This measure played an important role in arousing their initiative, enthusiasm and creativity. However, some confusion has resulted because other reforms were lagging behind. Such confusion is shown by the rash action in production, duplicate construction, regional blockades, and the lack of a unified disposition of materials in short supply. To insure the smooth fulfillment of state plans, there is now the need to strengthen planned leadership and administrative intervention. It is necessary for us to sum up our experience in restructuring in the past 3 years and work out an overall plan for further reforms in order that all reforms will be well coordinated and proceed in a planned and steady way.

Fifth, the leading bodies of enterprises and the ranks of workers and staff members should be streamlined and the ideological and political work to inculcate the sense of responsibility for the interests of the state and the collective should be carried out well, so as to completely change the state of weak and disorganized leadership which has existed in the enterprises since the "Great Cultural Revolution." The leading cadres in the enterprises must be competent and strong, and have high integrity and a keen sense of responsibility. We must have the determination to phase out those who are old, weak and incompetent, and find some other way to take care of them. There should also be distinct responsibilities for the other cadres and workers so that they can do their own jobs well. The surplus and the incompetent workers should be removed from their posts and organized to study or be given other suitable jobs. Those who are old and weak should be retired. There should be a system of rotational training for the cadres and workers in order to gradually raise their cultural and vocational levels. If we have the modern mechanical equipment but not the cadres and workers who are good at using it, the modernization of our national economy still cannot be accomplished. That is why the establishment of universities and specialized colleges, the improvement of their educational quality, the large-scale opening of schools for the short-term rotational training of cadres and workers, and the setting up of a sound system of rotational training are also important tasks for achieving a fundamental improvement of our national economy and the accomplishment of the four modernizations.

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## HEAVY INDUSTRY MUST ADVANCE STEADILY DURING READJUSTMENT

Beijing ZHONGGUO JINGJI NIANJIAN (1982) [ALMANAC OF CHINA'S ECONOMY (1982)]  
in Chinese 1982 pp IV 9-IV 14

[Article by Chen Xian [7115 0341]]

[Text] The readjustment and development of our national economy in 1981 were a great success. There was an all-round increase in agricultural output after the triumph over serious natural disasters. Despite reduced energy output, our industrial output including the production of consumer goods for daily use increased by a wide margin. We also achieved new success in heavy industry after readjusting the orientation of its service. The proportionate relationships between industry and agriculture and between accumulation and consumption have been further improved; financial and credit receipts and payments were basically balanced; the market prices were basically stable; both domestic and foreign trade have been expanded on the basis of increased production; and people's living standards have continued to rise. The whole economic situation was better than expected. Our national economy has embarked on the road of steady development.

One of the important problems in our economic life at present is how to readjust the orientation of service for the heavy industry in order that a certain rate of development can be maintained; the economic results can be further improved; and production, construction and the people's livelihood can be better served. This is an important question of whether the entire national economy can be steadily and harmoniously developed.

### I. Heavy Industry as the Material and Technological Foundation of Socialist Modernization

Old China was an agricultural country with a very backward economy. The foundation of heavy industry was very weak. There were only some machinery repair factories and mines and the output of steel and chemical products was very small. The industrial structure was incomplete and the technological level was very low. This was the backward foundation on which socialism was built in our country.

In the 30 and more years following the founding of the People's Republic, we have achieved great success in industrial construction under the leadership of the CPC and the people's government and by relying on the common efforts

of the broad masses. We have gradually established independent and fairly complete industrial and national economic systems, and the heavy industry has developed at a fairly high speed. In 1949-1981, the average annual growth rate was 15.3 percent. By now, we have already built the foundation of a fairly large-scale heavy industry which has a fairly complete assortment of departments and a certain technological level, and is basically capable of meeting the requirements of the national economic development. In 1981, our steel output reached 35.6 million tons and ranked fifth in the world; our coal output reached 620 million tons and ranked third in the world; our petroleum output enabled us to join the ranks of the very few countries whose petroleum output is above 100 million tons in the world; and our power generation reached 309.3 kws, ranking fifth in the world. In some 30 years' development of our heavy industry, we have covered the distance which ordinary industrially developed countries would have taken 50, 60 or even 100 years to cover. This shows the superiority of our socialist system, and is a precious asset accumulated by the frugality and pioneering spirit of our people. We should cherish this asset with extra care.

To correct the mistakes in our economic work of the past, and to readjust the imbalance, we have since the 3d Plenary Session of the 11th Party Central Committee adopted the policy of readjustment, restructuring, reorganization and improvement. Development of the heavy industry has been slower, and in 1981, the speed of its development was even 4.7 percent less than in the previous year. According to the prices of that year, the ratio of heavy industry's output value to the total industrial value was reduced from 56.9 percent in 1978 to 48.6 percent. Does this mean that heavy industry has been slower, and in 1981, the speed of its development was even 4.7 percent less than in the previous year. According to the prices of that year, the ratio of heavy industry's output value to the total industrial value was reduced from 56.9 percent in 1978 to 48.6 percent. Does this mean that heavy industry is no longer important and that it would be better for the ratio of heavy industrial output to the total industrial output to be as low as possible?

This idea is obviously wrong. Heavy industry is the leading sector in our national economy. It supplies to various sectors fuel, power, raw and semi-finished materials and technological equipment. Heavy industry is indispensable to the four modernization program. Both Marx and Lenin have pointed out that the universal law for expanded social reproduction is priority for the increase in the means of production. This law is of guiding significance in our socialist construction. Heavy industry mainly belongs to the means-of-production departments. Under normal conditions, the increase in heavy industry should be faster than in light industry which produces mainly the means of subsistence. Only thus can the entire social production continue to develop. However, this does not preclude a faster increase in light industry than in heavy industry at certain times. For a long time in the past, we have one-sidedly stressed the need for priority in the development of heavy industry, resulting in an imbalance in the production of capital and consumer goods. Now we have taken the initiative to slow down the growth of heavy industry and let agriculture and light industry grow faster than heavy industry. Instead of violating the objective laws for priority for the increase in heavy industry, this measure will precisely serve to develop heavy industry

steadfastly and to give higher priority to the increase in the means of production.

We are now carrying out a further readjustment of our national economy. The scale of capital construction has been reduced along with a corresponding reduction in the required equipment and materials. A number of heavy industrial enterprises have also stopped the production of those goods of high energy consumption which are already overstocked and in excessive supply, in order that the energy thus saved can be used to meet the needs of light industrial production. All these measures have caused a drop in heavy industrial production, which is hardly avoidable in the course of readjustment. However, this should be no cause for the belief that the ratio of heavy industrial output value to the total industrial output value should be as low as possible, or for doubting the leading role of heavy industry. It must be pointed out that the heavy industry which we have already built is the important material and technological foundation of our socialist modernization and our continued advance. Further development of heavy industry is required for the gradual modernization of our agriculture, industry, national defense and science and technology. Therefore, while vigorously developing agriculture and light industry during the readjustment, we should also see that heavy industry maintains its steady advance at a certain rate of development. This is of great significance in attaining our long-range strategic goal in a planned and systematic way.

How fast should heavy industry be developed? This question deserves our careful study. Here, we have had rich experiences and good lessons. Reviewing our history of the past 30 and more years, we can see that the development of our heavy industry has taken many twists and turns. During the First 5-Year Plan, heavy industry played the central role in our economic construction, and at the same time due attention was paid to the development of agriculture and light industry. The proportionate relationship among them was fairly well coordinated, and heavy industry developed fairly rapidly. From 1952 to 1957, the average rate of growth was 18 percent for industry and 4.5 percent for agriculture each year, and the ratio between the speeds of industrial and agricultural growth was 4:1. The ratio between the speeds of heavy and light industrial growth was generally 2:1. Thus after 5 years of construction, we have initially laid the foundation of socialist industrialization, and people throughout the country were happy about it. The reverse was the situation in 1958-1960 when, under the influence of the guiding ideology, people were over-anxious for quick success. The development of heavy industry was one-sidedly stressed, while agriculture and light industry were discriminated against in the allocation of labor, materials and money. As a result, not only the entire national economy was adversely affected, but also heavy industry itself turned out to be contrary to our expectation. It was a case of "more haste, less speed." In these 3 years, there was a 1.3-fold increase in industry including a 2.3-fold increase in heavy industry and only a 47.1 percent increase in light industry; and a 22.7 percent decrease in agriculture. Thus agriculture and industry, heavy industry and light industry were seriously out of proportion. To change this situation, we were compelled to spend 4-6 years in readjustment. It was not until 1964 that agricultural production returned basically to its 1957 level, and that industry returned to its 1960

level. Within industry the development of light industry was accelerated, while heavy industry had to take a big backward step. From this, we can see that if the proportionate relationships are well coordinated, heavy industry will be able to develop steadily and surely. On the contrary, if we one-sidedly stress heavy industry and fail to follow the rules of proportionate development, heavy industry after making some headway will not be able to keep up its progress and will finally have to be readjusted. Its development will then be actually slower. We have paid a heavy price for this experience and must always bear it in mind.

## II. The Need for Further Readjustment of the Service Orientation of Heavy Industry

For a long time, we tried to achieve unrealistic high speeds and one-sidedly stressed the priority of heavy industrial development. Thus heavy industry became excessively "self-serving" and segregated from the development of agriculture and light industry. Its scope of development then became increasingly narrow. According to Marxist theory of reproduction, even though there is priority for the increase in products of the first category and there will be continued distribution of these products as the means of production among various branches of the same category, these products will ultimately be exchanged for products of the second category and be restricted by individual consumption. The reason for this is that the means of production should be produced to meet the requirements of the consumer goods departments instead of their own requirements. In reviewing the history of setbacks for our heavy industrial development, a restudy of this Marxist theory will be of even greater significance. Now that the economic readjustment is going on, the service orientation of heavy industry must be further readjusted so that the sphere of its service can be expanded and a certain rate of development can be maintained. Only thus can the economic development be consistent with the objective requirements.

In real economic life, there must be a further readjustment of its service orientation before the heavy industry can take any forward step. In the past, the high accumulation rate, high development speeds and overextended capital construction front called for a great deal of equipment and materials, thus pushing heavy industry forward. Now that the accumulation rate has been appropriately lowered, the investment in capital construction has been reduced, and industrial development has been slowed down, the demand for heavy industrial products has also been reduced. Furthermore, "extensiveness" was common for capital construction investments in the past; now we stress "intensiveness." It is now necessary for heavy industry to produce more low-consumption but highly efficient equipment in order to step up the equipment renovation and technical transformation among the existing enterprises. In the past, large farm machines were in demand in the countryside; now, with the adoption of the system of responsibility for production, this demand has been reduced, and the demand for small farm tools of various types has been increased. In the past, light industry was neglected resulting in the scarcity of consumer goods for daily use and the monotony in varieties and designs; now the development of the consumer goods industries is a matter of great importance. The rise in the people's standards of living demands not only an increase in

the quantity, but also the improvement of quality and the durability of industrial products. It is therefore necessary for heavy industry to provide more industrial raw and semifinished materials for the production of low-price and attractive goods. The inadaptability of heavy industry to the new situation was obvious. On the one hand, the productive capacity of heavy industry was excessive; the products were overstocked and not selling well; and many enterprises were operating under capacity with their equipment laid idle. On the other hand, the fuel, power, certain raw materials and mechanical equipment required by other departments could not be produced. This was the contradiction confronting heavy industry. Adapting itself to the new situation, the heavy industry has in the past 2 years reduced the production of certain goods in excessive supply and changed its service orientation. It has also done a great deal of work, and with great success, in increasing the production of urgently needed items for the light industrial market and in expanding the exports. This can be called a fine start.

Premier Zhao Ziyang pointed out in his report on the work of the government at the Fourth Session of the Fifth National People's Congress: "Apart from producing certain durable consumer goods, in its future development, our industry must attend to the more important task of readjusting its orientation, enlarging its scope, raising the quality of its services and improving its adaptability, so that it can give better service to agriculture and the consumer goods industries, the technical transformation of the economy, exports and the modernization of our national defense. Such is the way forward for our heavy industry." This passage is of important guiding significance to the development of heavy industry at present and for a fairly long time to come.

There is a broad road ahead for heavy industry to serve agriculture. Along with the gradual development in agricultural technical transformation and further increase in agricultural output, there will be an increasing demand for various types of farm machinery, chemical fertilizers, insecticide, means of transportation and other means of production. Along with the improvement of the peasants' livelihood, there will also be an increasing demand for steel materials, timber, cement, plate glass and other civilian construction materials, civilian fuel, power and other durable consumer goods. "Agriculture as an important market for heavy industry" should be included in our agenda.

The service of heavy industry to the consumer goods industries will be increasingly significant. As we all know, apart from the raw materials supplied by agriculture, the further development of the consumer goods industries has to rely on the heavy industry for the supply of raw and semifinished materials and technological equipment. In the past, agricultural products were mainly used as raw materials for our consumer goods industries. In the past 30 and more years, along with the development of heavy industry, the composition of raw materials for consumer and goods has undergone a fairly great change. For our present consumer goods industries, the proportion of industrial raw materials has risen from 12.5 percent shortly after the founding of the People's Republic to 31.5 percent, while that of agricultural raw materials has correspondingly dropped from 87.5 percent to 68.5 percent. In the past several years, the increased procurement prices for agricultural products have brought about a very rapid development of the cash crops which has in

turn greatly promoted the development of consumer goods industries. However, we must also be aware that since we have a large population and little arable land, the future development of cash crops will mainly depend on the increase in output per unit area, and the margin of increase is necessarily limited. Therefore, besides further relying on agricultural raw materials, we must also actively develop the sources of industrial raw materials and greatly increase the output of chemical industrial raw materials and metal materials with more varieties and better quality. Raising the proportion of these industrial raw materials will have a strong impact on the development of the consumer goods industries.

The service of heavy industry to the technical transformation of the national economy will mark a strategic shift. In the past, national economy development mainly relied on the increase in equipment through new projects. Now that we have established independent and fairly complete systems of industry and national economy, heavy industry has a fairly solid foundation. In the future, the national economy will be developed mainly through "intensiveness" instead of "extensiveness." It will be necessary for technical transformation to be carried out selectively and systematically so as to give full play to the role of the existing enterprises. We have now more than 380,000 industrial and transportation enterprises, and a fairly large number of them are using obsolete equipment and outdated technology. Even the state-run enterprises enjoying comparatively better conditions have many fixed assets urgently requiring renovation or transformation. The equipment of light industry is mostly at the technical level of the 1940's or 1950's. In the textile industry too, most of the equipment is at the technical level of the 1960's. In the metallurgical industry, more than 70 percent of the rollers are at the technical level of the 1940's or 1950's, and very few of the 1960's or 1970's. In the machinery industry, most of the equipment is at the technical level of the 1950's, and only a very small number of its products are up to the level of the 1970's. The energy consumption is appalling particularly because of the high-consumption equipment and the generally backward technology. There are now 200,000 boilers in the country, consuming one-third of the coal output each year. Because of the low heat efficiency, coal consumption has to be increased by more than 40 million tons each year. In heavy industry, it is necessary for the old "coal tiger" boilers to be transformed into advanced boilers with high heat efficiency; for the old "electricity tiger" pumps to be replaced with high-efficiency industrial pumps; for the low- and medium-voltage power generating units to be replaced by the high-temperature and high-voltage power generating units; and for highly efficient wind mills, transformers and power machinery to be supplied. All these are major issues with a bearing on the overall national economy. Therefore, there will be a great deal for heavy industry to do in serving technical transformation.

There is also a promising future for heavy industry in serving exports. In the past, the overwhelming majority of our exports are agricultural sideline products and processed products. Now, on the basis of industrial development, a great change has taken place in the makeup of our exported commodities, the ratio of industrial and mineral products to agricultural sideline products and processed products being half to half. However, we must not overlook the fact that a large number of the industrial and mineral products

exported are crude oil, coal, mineral ores and other primary products, and that there are good prospects for increasing the exports of finished or semi-finished products. Thanks to the efforts of the heavy industry departments, the exports of heavy industrial products in 1981 were much increased over the previous year, and the exports of mechanical and electrical appliances were more than doubled. This is a proof of its good future. The heavy industry departments should pay attention to and understand the international market conditions, continue to improve the quality of the products and to increase their competitive power and make new contributions to the increase in exports and in foreign exchange earning.

There is also lots of work for the heavy industry in serving the modernization of national defense. This will strengthen our national defense as well as raise the technical level of heavy industry itself.

Through its performance of these services, the heavy industry will be able not only to promote the development of other economic sectors, but also to improve, strengthen and further develop itself. Therefore, a further readjustment of the service orientation of the heavy industry is by no means a temporary expedient, but an important matter concerning the development of heavy industry and then the overall national economy. The more we understand this matter, and the more careful we are in handling it, the greater will be the initiative in our hands.

### III. The Need for Better Economic Results in Heavy Industry

For a long time, we have overemphasized the need for speed in economic work and failed to pay adequate attention to economic results. Consequently, the increase in social wealth and the improvement of people's living conditions failed to match with the labor spent by the people. In his report on the work of the government at the Fourth Session of the Fifth National Congress, Premier Zhao Ziyang regarded the improvement of economic results as the basic starting point in all economic matters and as the nucleus and a new trail in economic construction. He said: "We must proceed from the actual conditions in China and blaze a new trail characterized by a fairly steady tempo and better economic results, yielding more substantial benefits to the people." This is a summation of historical experiences and a necessity in real life. Unless we focus all economic work on the attainment of better economic results, we will not be able to bring about a basic improvement of the state's financial and economic conditions. Production, construction and circulation can be no exception as far as the need for improving economic results is concerned, and heavy industry should make even greater efforts to minimize the consumption of living and materialized labor to produce the maximum of products that are suitable for social requirements.

As we all know, heavy industry occupies an important place in the national economy and the improvement of its economic results is of great significance for the following reasons: First, it plays a major role in the economy. Its personnel amounts to more than 70 percent of the total number of industrial workers and staff members; its fixed assets amounts to more than 80 percent of the total industrial fixed assets; its net output value amounts to more

than one-half of the industrial net output value; and its exports amount to approximately 40 percent of the total exports. At present, our national revenues rely mainly on industrial accumulation funds, and the major portion of these funds come from heavy industry. The economic results of heavy industry have a close bearing on the state's financial and economic conditions. Second, heavy industry has a strong influence on the national economy. In addition to meeting the requirements of its own departments, heavy industrial products are also supplied to other economic sectors in fairly large amounts. Therefore, the quality of heavy industrial products has a direct impact on the economic results of other sectors. If our heavy industry can supply more technically advanced products of fine quality, low consumption, high efficiency and low production costs, the economic results of the entire national economy will be very greatly improved. Third, heavy industry has strong potential. At present, many heavy industry enterprises have problems of chaotic management, high material consumption, poor product quality, high production costs, low labor productivity, large operating losses and poor utilization of productive capacity; and many economic and technical indices are lower than what have been previously attained. Therefore, there are good resources to be tapped for the improvement of economic results in heavy industry in the course of readjustment. How can the economic results of heavy industry be improved? In the long run, we have to greatly strengthen scientific research, organize the technical force to tackle the key problems, popularize the scientific and technological achievements, enhance the administrative ability of the cadres, raise the cultural and technical levels of the workers, and gradually shift heavy industry on to a new technological foundation. For the present, the following points should be stressed:

First, the all-round reorganization of enterprises. Enterprises are the basic-level units in economic activities. To improve the economic results of heavy industry, we must start with the reorganization of enterprises. The key points in the reorganization of enterprises are: 1) To streamline the leading bodies of enterprises. A number of cadres and technicians who are young, healthy, and professionally competent, and have both ability and political integrity, should be selected for the posts of managers, assistant managers and plant directors in order that the leading bodies of enterprises will become more revolutionarized, better educated, professionally more competent and younger. 2) To consolidate and perfect the system of economic responsibility. The responsibility of the enterprises to the state and of the workers to the enterprise should be clearly spelled out. At the same time, the various types of basic work in enterprise management should be strengthened; the systems of financial accounting and economic accounting should be established; production should be arranged strictly according to fixed numbers of workers and fixed quotas; and there should be an all-round evaluation of enterprises. 3) To streamline and strengthen labor discipline and to set up and strengthen the system of reward and punishment. 4) To set up and strengthen financial and economic disciplines. All forms of tax evasion should be stopped, and in cases of breaches of financial discipline such as retention of profits which ought to be turned over to the state and evasion of taxes, the persons concerned should be made to bear the economic responsibility. Through the organization of heavy industry enterprises, we



will be able to improve the quality of products, lower the production costs, raise the labor productivity and increase the speed and benefits.

Second, readjustment of the line-up of enterprises and the product mix. First, we must readjust the line-up of enterprises. The present line-up of heavy industry enterprises is irrational. Although the present enterprises are already very many, the phenomena of blind construction and of the small competing with the large and backward competing with the advanced are still increasing. Therefore, readjustment of the line-up of enterprises must continue, and a number of enterprises whose products are not suitable for social needs and of poor quality, and whose energy consumption is high, or which have incurred losses over the years must be resolutely closed, suspended, merged or retooled. At the same time, the enterprises should be suitably combined in accordance with the economically rational principle of specialization and cooperation. Furthermore, we should set up standards for building plants as a precaution against rash action in building new plants. Only thus can we accomplish a rational line-up of the existing enterprises and improve the comprehensive social economic results. Next, we should readjust the product mix. In the present heavy industry, fuel, electricity and the raw and semifinished materials for forestry industry and building industry are in short supply and far from adequate for the needs of national economic development. The products of processing industry, particularly the mechanical and electrical products are mostly in excessive supply, resulting in serious overstocking. In the future, we should accelerate the development of the fuel and power industries and change the backwardness of mines. At the same time, we should step up the work in communications and transportation and continue to develop the raw and semifinished materials industry. In the production of mechanical and electrical products, we should tap the resources of the existing enterprises through specialization and cooperation and upgrade their products. We should also improve the designs, plan for new varieties and produce strictly according to the demand. The production of those products which are in excessive supply, requiring high energy consumption and unsuitable for the demand should be resolutely restricted. As to those products which are temporarily in short supply, we should carefully plan for their increase after investigations, study and overall surveys. We must guard against any rash action which may bring about new stockpiles. We must have the long-range and overall, instead of the immediate and partial, interests in mind before we can obtain the maximum economic benefits. By such readjustment of the line-up of heavy industry enterprises and their products mix, we will be able to increase the output through the practice of economy and produce more heavy industrial products with the same amounts of fuel and raw materials to meet the social needs.

Third, equipment renovation and technical transformation for the existing heavy industry enterprises. Technical transformation for the existing enterprises requires less investment but produces quicker and better results than those of new projects. Technical transformation for heavy industry enterprises should be based on the needs as well as the capability, and carried out in a planned and systematic way. We should, first of all, attend to the industrially developed central cities and backbone enterprises instead of rushing into action on an all-out basis. We should proceed from reality and

focus the work of technical transformation on the conservation of energy and raw materials, the improvement of product quality, the reform of product mix and the increase in the products which are needed in the society and are in short supply. In short, the improvement of economic results should be the main goal. The funds required for technical transformation should mainly come from the enterprises themselves. At present, the portions of depreciation funds and retained profits in the hands of the heavy enterprises to be used as production development funds are quite large, and can be even larger with the addition of bank loans. These funds should be mainly used on technical transformation and particularly equipment renovation, but not new projects. There will be very good investment returns if the technical transformation for existing enterprises is effectively carried out.

Fourth, improvement of economic results. We should first try to clear up the heavy industry projects which are still under construction. We must resolutely halt those projects which are not urgently needed and are unrealistic in terms of construction possibilities and which cannot operate normally even after completion, so that the investment can be diverted to those projects which are urgently needed and can be quickly completed for regular operation. If any project is not synchronized with its necessary supportive construction, supplementary arrangements must be quickly made so that the available resources can be concentrated to insure the early completion and then the regular operation of the projects. Next, we must strictly control the new projects. To guard against the overextension of the capital construction front, we must resolutely refrain from undertaking any new project as long as we can increase our production by relying on the existing enterprises. For the large and medium-size new projects, we must be cautious in our decision and have its correctness confirmed time and again, before they are included in our plans, to be followed by arrangements for their designs and construction. All large and medium-size construction projects must strictly adhere to the procedures of capital construction, and the advance work must be carefully carried out. We should also observe the five "fixed terms," namely, fixed scope of construction, fixed total investment, fixed construction periods, fixed investment returns and fixed external cooperation. By this means, we can guard against the mistakes of starting any project hastily before the resources and geological conditions are ascertained, before the economic results are correctly calculated, or before the required external conditions are available, with waste and losses as the result. For capital construction investments, we should adopt the method of bank loans in place of financial allocations so that the construction units will strengthen their economic accounting. The system of contracted construction should be gradually introduced for capital construction. It will help to speed up the progress, improve the engineering quality, reduce the construction periods, lower the construction costs and increase the investment returns. The heavy industry departments must make every effort to create greater productive capacity with the same amount of investment.

If we will exert our efforts in these directions, the economic results of our heavy industry can be very greatly improved.

In short, as long as the heavy industry can continue to readjust its service orientation, enhance its adaptability and expand the sphere of its services during the further readjustment of the national economy, it will be able to play its leading role more effectively, advance steadily, and make its new contributions to the "four modernizations."

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EMPHASIS ON DEVELOPING THE CONSUMER GOODS INDUSTRY IS AN IMPORTANT PART  
OF CHINA'S NEW PATH IN ECONOMIC CONSTRUCTION

Beijing ZHONGGUO JINGJI NIANJIAN (1982) [ALMANAC OF CHINA'S ECONOMY (1982)]  
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[Article by Wang Renzhi [3769 1804 0037]]

[Text] In the spring of 1979, the CPC Central Committee and the State Council decided on a program of readjustment, restructuring, reorganization, and upgrading of the national economy. In the process of carrying this program into effect during the past 3 years, the negative and positive experiences accumulated in the building of a socialist economy have been assiduously summarized, benefits having been derived therefrom. On the one hand considerable new experiences were gained from efforts to solve numerous new problems and new conflicts encountered in the realization of economic life. As a result of the summarization of historical and current practical experiences, the CPC Central Committee and the State Council noted explicitly that future development of the country's economy would require real changes in the old methods formed under guidance of "leftist" ideology, genuinely proceeding from China's realities, and the taking of a new road that is relatively speedy, from which economic benefits are relatively good, and from which the people can derive real material benefits. The process that went from deciding on an eight character program of readjustment, restructuring, reorganization, and upgrading to the proposal for taking a new road suited to the circumstances of China's economic development did much to improve understanding of problems in the building of China's socialist economy. Economic work made remarkable progress. For this very reason, after these several years of effort, China's national economy has taken a path of stable development.

Carrying out of a program of readjustment of the national economy and taking a new path of economic construction includes many ingredients of which emphasis on development of consumer goods industries is an important part. This article will provide for the reference of readers some explanation of progress already made, prospects for development, and pertinent problems requiring solution that bear on the importance of giving attention to development of consumer goods industries.

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Efforts to satisfy all the needs of the people's material and cultural life is the goal of socialist production. Our reason for wanting to readjust the national economy and take a new road in economic development is, in the final analysis, to give expression to the goal of socialist production, which is to provide the people with greater material benefits. In satisfying the people's needs and having the people get material benefits, development of consumer industries holds particularly important significance. China's level of productivity is low and the people are not yet prosperous. The proportion of popular consumption devoted to food, clothing, and such basic needs is very great. Most of the means of consumption are provided by agriculture primarily. For a considerable time to come, the state of agriculture will play a decisive role in the extent to which people's wants are satisfied. It is necessary to realize additionally that among agricultural products, the portion that goes directly into consumption following simple processing by the peasants themselves is becoming an increasingly small proportion of agricultural products. Many agricultural byproducts are provided industry as raw materials, entering the consumption area only after industrial processing. Grains such as paddy rice and wheat become polished rice and flour following industrial processing. Cash crops such as cotton, oil-bearing crops, sugar crops, and flue-cured tobacco become cotton yarn, edible oil, edible sugar and cigarettes only after industrial processing. These farm products have to go through the medium of consumer goods industries before they have anything to do with the people's consumption. As for the various products produced by means of production industries such as steel, machines, and equipment, even more specialized processing of this kind or that is required, with some going through agricultural and some going through consumer goods industries before they can play a role in raising the people's consumption levels. Consequently, in a certain sense the relationship between consumer goods industries and the people's livelihood is more direct, more wideranging, and closer than in other industrial sectors. The various areas of people's consumption including clothing, food, housing, articles used in daily life, travel, culture, entertainment, medical treatment, sanitation, etc., all require that the consumer goods industries provide products of diverse kinds. Whether or not our production gives good expression to the goal of socialist production depends in considerable degree on whether consumer goods industries attain requisite development and are able to supply increasingly large amounts of cheap, attractive, abundant, and varied consumer goods. The mass of people frequently use this as their criterion in measuring and judging whether economic construction is good and the extent of achievements.

In China, consumer goods industry generally means light industry. (See footnote) In the more than 30 years since founding of the People's Republic, China's light industries have traveled a tortuous road, but they have never been given the serious attention they deserve. During the first several years following Liberation, the speed of revival of light industry production surpassed pre-Liberation's highest levels. During the 1953-1957 period of the First 5-Year Plan, largely because of the smooth progress of socialist reform of the ownership of the means of production, which emancipated productivity and built some new light industrial enterprises, industrial consumer goods production saw very great development. At that time, the supply of industrial consumer goods pretty well corresponded to the rapid increase in society's purchasing power. Except for cotton cloth, the supply of which was limited, all other goods were readily available. During many periods following 1958, economic direction committed "leftist" errors in advancing prematurely, time after time proposing unrealistic and overly high goals and slogans. In order to realize high production quotas, they then carried out large scale capital construction that was beyond national endurance, particularly in the building of heavy industry. As a result, a situation of high accumulations, low consumption, overemphasis on heavy industry and underemphasis on light industry developed. During the "Great Leap Forward" from 1958 to 1960 when heavy industry "took steel as the key link" and malignancy in heavy industry galloped along, the output value of light industry as a ratio of gross industrial output value fell sharply from 55 percent to 33.4 percent leading to a serious situation of supply not keeping up with demand in the light and textile industries. As a result of readjustments during the early 1960's, the output value of light industry as a ratio of total industrial output value climbed back to 51.6 percent in 1965. However, after 1966, it fell again little by little to 46.2 percent in 1970, 44.2 percent in 1976, and 43.1 percent in 1978. Because of the slow development and urgent shortages in light industrial production, the limited amounts of varieties of industrial consumer goods authorized to be supplied gradually became more limited. This restricted improvements in the people's livelihood, and dampened people's enthusiasm for production.

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Note: An overwhelming majority of products of China's light industries are means of consumption, and a small number of products are means of production, as for example cloth, salt, paper, leather, and ceramics used in industry. The ratio of these products to total industrial output value of industry is probably less than 20 percent. Among the products of heavy industry an overwhelming majority are means of production and a small portion is means of consumption such as fuel and power used in daily life and civilian construction materials. This portion of goods probably amounts to about 20 percent of the total output value of heavy industry. Because of the lack of accurate statistical data about consumer goods industries, and because the distinction between light industry and heavy industry basically reflects the relationship between means of consumption and means of production in industrial production, in the following exposition, we will use an analysis of light industry to demonstrate and explain problems in the consumer goods industry.

The situation of no serious attention to light industry has changed since 1979. Party and government have both repeatedly emphasized the need for vigorous development of light industry.

Some major examples are provided below:

- (1) At the time of deciding to readjust the national economy in the spring of 1979, they proposed a speed of growth for light industry to catch up with or surpass the speed of growth of heavy industry.
- (2) At the end of 1979, they proposed new actions for the supply of processed materials and energy, for tapping potential, innovating and reforming, for capital construction, bank loans, for foreign exchange and the importation of technology, and for communications and transportation that would give priority to assuring the needs of light industry for development.
- (3) At the end of 1980, they decided on further readjustment of the national economy, proposing retrenchments in certain regards, such as the need for tremendous reduction of investment in capital construction. In other regards, there would be resolute progress, such as efforts to develop light industry and in other sectors related to production of goods used in the people's daily lives.
- (4) In the spring of 1981, it was further made clear that in readjustment of the economic structure, development of consumer goods production was to be placed in an important position.
- (5) At the end of 1981, in accordance with the call to take a new road in economic development, a 10-point program for future building of the economy was put forward, one point of which was that for a considerable time, development of consumer goods industries had to be emphasized.

Such close attention by the party and government to development of light industry and the demand for rapid increase in supplies of industrial consumer goods has significance in many regards. First, this is a key to the rationalization of the industrial structure. For a long time in the past, one-sided emphasis was given priority development of heavy industry, and both agriculture and light industry were elbowed aside. The proportional relationship between production of the means of production and production of the means of consumption were seriously imbalanced. One of our objectives in readjustment of the economy is to coordinate the relationship among agriculture, light industry, and heavy industry and to bring about balanced development between production of the means of production and the means of consumption. Vigorous development of light industry will require that agriculture supply increasing amounts of raw materials so that light industry can provide the peasants with increasing amounts of the products of light industry and the textile industry. This will give powerful impetus to the development of agriculture, will advance agriculture's full use of resources, will develop forestry, animal husbandry, sideline occupations, and the fishing industry, and will rationally readjust the internal structure of agriculture. Energetic development of light industry will require not only a change in the

tendency to overemphasize heavy industry, but will also impel heavy industry to remedy failings in serving itself too much. It will induce heavy industry to concentrate on development of consumer goods production to readjust the thrust of its own service and its product structure, thereby placing development of heavy industry on a firm foundation. Therefore, by taking a firm grip on the link of consumer goods industry development, we should be able to make real progress in building sensible proportional relationships between agriculture and light industry and between light industry and heavy industry, and in building rational proportional relationships within agriculture and within heavy industry. Thus, we will be fairly able to solve major problems existing in the composition of China's industry so that society can expand reproduction normally.

Second, this constitutes a material foundation for readjustment of the relationship between accumulation and consumption. For many years the country's capital accumulation has been too high a proportion of national income, and consumption capital has been too low a proportion of national income. It has been impossible for the people's livelihood to improve as production developed. Reduction in the overly high rate of accumulation with relative increase in consumption capital is yet another goal of economic readjustment. However, in order to increase consumption capital, corresponding increase in supply of consumer goods is necessary. If the money income of people in cities and the countryside is increased for an increase in residents' purchasing power, but insufficient consumer goods are provided, market prices will rise. The extent of increase in consumption capital in recent years has already exceeded the extent of increase in supplies of consumer goods. In order to shorten and eliminate this gap, among the measures to be adopted one important one is acceleration of the development of light industry. This is because light industrial products hold a decisive position in retail sales of consumer goods, accounting for about two-thirds of the total figure. Only through rapid increase in the production and supply of industrial consumer goods will we be able to continue to lower the accumulation rate in a rational way and properly increase consumption capital as a ratio of national income.

Finally, this is a major way in which to increase economic effectiveness and overcome current financial and economic difficulties. For the next several years, a substantial part of the annual increase in financial revenues will be offset by year-by-year increases in price subsidies and increases in wages, while some financial expenditures will have to increase. As a result, the fundamental balance between revenues and expenditures is yet to be stabilized. In addition, during the next several years energy production will not likely increase by very much, and this will limit development of industrial production. In order to surmount these difficulties, every available means will have to be used to increase economic effectiveness in building up production, to increase revenues, and to conserve energy. Development of light industry requires small investment; the construction cycle is short; profits and taxes are great; and little energy is consumed. Statistics for 1980 show that for every 100 yuan of fixed asset output value of light industry is 277 yuan; for heavy industry it is 76.6 yuan. Thus, the ratio for light industry is more than 2.6 times than for heavy industry. For every 100 yuan of fixed assets, profits and tax revenues realized from light industry is 60.60 yuan; for



heavy industry it is 17.70 yuan, light industry providing 2.4 times more than heavy industry. Total energy consumption per 100 million yuan of output value is 318,000 tons for light industry and 125,400 tons for heavy industry, or three-fourths less for light industry than heavy industry. Development of light industry requires little investment for fairly substantial output, and is able to play a clearcut role in increasing economic effectiveness, in bringing about fairly high speed economic growth, and in achieving a fundamental turn for the better in the financial and economic situation.

In short, emphasis on development of consumer goods industries is a major policy that the party and government have worked out on the basis of correct analysis of the national economy as a whole in an effort to satisfy the people's needs. This policy is not only a fine prescription for numerous current ills in economic life, but one that will have deep effects on long-term economic development.

(2)

Since 1979, both party and government have taken a series of vigorous actions in hastening development of light industry that have substantially improved conditions for production and construction in light industry from what they had formerly been. First was an increase in raw and processed materials, and energy used in light industry. Because of the development of agricultural production, and particularly development of cash crop production, agriculture's supply of raw materials to light industry increased tremendously. Comparison of 1981 with 1978 shows cotton supplies to have increased 39 percent, sugar crops 38 percent, and flue-cured tobacco 18 percent. Industrial raw materials and energy used in light industry, which were frequently denied light industry in the past, increased strikingly during the past several years, with supplies being substantially assured. For details on light industry's consumption of steel products, timber, and electricity, please see the following table:

	(1) 钢 材		(2) 木 材		(3) 电	
	轻工市场产品的 (4) 消费量 (万吨)	占生产消费量的 (5) 比重 (%)	轻工市场产品的 (6) 消费量 (万立方米)	占生产消费量的 (5) 比重 (%)	轻工业消费量 (7) (亿度)	占生产消费量的 (5) 比重 (%)
1978年	218	11.7	521	17.9	322	
1979年	265	12.8	823	27.5	353	
1980年	286	13.3	898	30.8	318	10.8
1981年	286	14.0	903	32.6	354	11.5

Key:

- (1) Steel products
- (2) Lumber
- (3) Electricity
- (4) Consumption of light industrial market commodities (10,000 tons)
- (5) Percentage of consumption
- (6) Consumption of light industrial market commodities (10,000 meters)
- (7) Light industry consumption (100 million units)

Second has been an increase in investment in capital construction for light industry and of special loans for tapping potential, renovation, and improvements. Investment in light industry, which was 2.93 billion yuan in 1978, increased to 4.26 billion yuan in 1981. In 1980, banks began lending special funds to light industries to make use of potential, for renovations, and for improvements at a rate of about 1.7 billion yuan per year.

Third was an increase in the amount of foreign exchange used to import raw materials for light industry. In 1978, \$2.2 billion was used to import raw materials for light industry. In 1979, the amount was \$2.6 billion; in 1980, \$5 billion, and in 1981, \$6.3 billion rising from 20.2 percent of total imports in 1978 to 34.8 percent in 1981.

As a result of the vigorous support given by the state and all industries, plus reliance on the hard work of the broad masses of staff and workers on the light industry front line, the output value of light industry has increased greatly. Light industry's speed of growth in output value was 9.6 percent in 1979, 18.4 percent in 1980, and 14.1 percent in 1981 greatly outstripping speed of growth of heavy industry. Output value of light industry as a ratio of total industrial output value has gradually risen. In 1979, it was 43.7 percent; in 1980, 46.9 percent; and in 1981, 51.4 percent. Output of major light industrial products increased considerably; quality improved; and colors, varieties, and designs increased. The following table demonstrates the volume of increase for 10 different light industry and textile industry products.

	1978年	1981年	1981年比1978年增长 (%) (11)
1. 棉布 (亿米)	110.3	140.0	26.9
2. 化学纤维 (万吨)	28.4	52.4	84.5
3. 糖 (万吨)	227.0	307.9	35.7
4. 卷烟 (万箱)	1,182.0	1,678.1	42.0
5. 合成洗涤剂 (万吨)	32.4	47.7	47.2
6. 自行车 (万辆)	854.0	1,745.0	104.3
7. 缝纫机 (万架)	486.5	1019.8	109.6
8. 手表 (万只)	1,351.0	2,872	112.6
9. 收音机 (万部)	1,167.7	3,951.5	238.4
10. 电视机 (万部)	51.7	484.2	836.8

Key:

- (1) Cotton cloth (100 million meters)
- (2) Chemical fibers (10,000 tons)
- (3) Sugar (10,000 tons)
- (4) Cigarettes (10,000 cartons)
- (5) Synthetic detergents (10,000 tons)
- (6) Bicycles (10,000 items)
- (7) Sewing machines (10,000 items)
- (8) Wristwatches (10,000 items)
- (9) Radios (10,000 items)
- (10) Televisions (10,000 items)
- (11) Percent increase in 1981 over 1978

Accompanying development of light industry was a year-by-year increase in average per capita consumption of major industrial consumer goods by urban and rural residents. Cotton cloth consumption was 24.1 chi in 1978, 27 chi in 1979, 30.2 chi in 1980, and 30.8 chi in 1981. Sugar consumption was 6.6 jin in 1978, 7.1 jin in 1979, 7.7 jin in 1980, and 8.2 jin in 1981. Consumption of high and medium quality goods such as woolen fabric, silks and satins, woolen yarn, and knitwear more than doubled between 1978 and 1981. The amount of durable goods in the hands of residents throughout the country also increased very rapidly. More than 80 percent of the durable consumer goods in the hands of urban and rural residents today such as television sets, recorders, washing machines, electric refrigerators, and electric fans have been purchased during the past 3 years.

The following table shows the increase in ownership of five durable consumer goods per 100 people during the past several years.

	1978年	1979年	1980年	1981年	1981年比1978年增长 (%) (6)
1. 自行车 (辆)	7.7	8.6	9.8	11.1	44.2
2. 缝纫机 (架)	3.5	4.0	4.7	5.5	57.2
3. 手表 (只)	8.5	10.6	13.0	15.7	84.7
4. 收音机 (部)	7.8	9.4	12.1	14.9	91.0
5. 电视机 (部)	0.3	0.5	0.9	1.6	433.3

Key:

- (1) Bicycles
- (2) Sewing machines
- (3) Wristwatches
- (4) Radios
- (5) Television sets
- (6) Percent increase in 1981 over 1978

The fairly rapid growth of light industry and the saving of large amounts of energy played a major role in maintaining a certain speed of development of industry as a whole. Comparison of 1978 with 1981 shows a total increase in energy consumption of only 6.5 percent, while total industrial output value increased 2.9 percent. Energy savings amounted to about 84 million tons of standard coal, of which about 43 million tons of standard coal derived from energy savings resulting from the proportional increase in light industry and the proportional decrease in heavy industry. This was 51.2 percent of total energy savings. As a result of the development of light industry, considerable increases occurred in profits and taxes from light industry and in foreign exchange earned from the export of light industrial goods. Profits and taxes realized amounted to 30 billion yuan in 1978, and 40 billion yuan in 1981, a 10 billion yuan increase. Foreign exchange earnings from exports amounted to \$4.3 billion in 1978 versus \$7.8 billion in 1981, an 81 percent increase.

Rapid development of light industry has played a positive role in stabilizing market prices, in improving the people's living standards, in conserving energy, and in increasing national revenues and foreign exchange earnings, which are clear indicators that China's economy has begun to take the path of sound development. However, it should be realized that development of light industry is still a long way from satisfying society's needs. Today supply of many light industrial products is still less than demand. Name brand products, and goods of fine quality in new colors and designs are even more likely to be out of stock. For some light manufactures, exports clash with domestic sales. When domestic sales are taken care of, supplies for export are hard to come by. When export requirements are met, all that can be done is reduce the amounts supplied domestic markets. It has not been possible to supply sufficient goods to meet the past several years' rise in urban and rural purchasing power, and the amount of excess purchasing power is increasing year-by-year. This both exerts pressure on consumer goods industries and also gives impetus to their forward movement.

Not only will vigorous increases in production by China's consumer goods industries be necessary for some time now, but prospects are also vast for their development over the long term. This is because, first of all, China has a population of 1 billion, so even with strict family planning, for some time to come the population will increase annually by more than 10 million. This requires commensurate year-by-year increase in the amounts of all kinds of consumer goods. Second, the Chinese people's consumption level is very low and should be gradually increased. With a large population, just a slight increase by one point in average per capita consumption is a very large figure in absolute terms. Right now the structure of people's consumption is in process of undergoing change. The proportion of consumption for food and fuel is declining, while the proportion of consumption for food and items used in daily life is rising. (See footnote) The proportion of grain

Note: Comparison of various kinds of consumer goods as a proportion of total consumer goods consumption in 1978 versus 1981 shows the following: A rise from 23.1 to 25 percent in clothing, a rise from 14.2 to 15.2 percent in articles used in daily life, a decline from 58.6 to 56.6 percent in food products (and when adjustment is made for price rises, the decline is to 51.9 percent), and a decline from 4.1 to 3.2 percent in fuel.

consumption is declining as a ratio of total food consumption, while the proportion of meat, sugar, tobacco, alcoholic beverage, and other beverage consumption is rising. In clothing, the proportion of cotton cloth is declining while the proportion of mixtures of polyester and cotton cloth, chemical fiber knitwear, and woolen fabric is increasing. A general decline has taken place in items used in daily life, while the proportion of durable consumer goods and electrical appliances for home use has increased. The need for rise in the people's standard of living places increasingly high requirements on consumer goods industries for both quantity and quality. Third, in capitalist countries, steady expansion of production is relatively curtailed by the requirement that the masses have the ability to pay. In some economically advanced capitalist countries, the required amounts of quite a few consumer goods have reached saturation or near saturation, and any large increases will be difficult. China is a socialist country in which the development of production is for maximum satisfaction of the constantly increasing needs of the people's material and cultural lives. Consequently, in their development, consumer goods industries do not encounter the obstacles that they encounter in capitalist countries. The foregoing three points make clear that a potentially extremely huge domestic market exists for consumer goods industries in China, which is something that no other country has or can have. Additionally, China is also facing an international market that has yet to be used to the fullest. Numerous of China light industrial and textile manufactures are unique, and are much welcomed by foreign consumers. However, for various reasons, marketing avenues have not yet been opened for large numbers of light industrial goods, and we must strive to increase production, supply, and marketing. Both domestic and international market conditions show great prospects for development of China's consumer goods industries, and that there is much to be done.

In recent years China's consumer goods industries have made gladdening progress, but this is no reason for the slightest slackening of our efforts in this regard. We have made a fairly good beginning, and we should maintain and develop this fine trend to the maximum possible extent. In the overall progress of modernization, we must make development of consumer goods industries an extremely important task, and complete it in a careful and skillful way.

(3)

In view of present realities, making consumer goods industries maintain sound development at fairly high speed requires focusing study on and handling well the following several relationships.

First is the relationship between supply and demand. In an overall sense, China's supply of industrial consumer goods is unable to satisfy demand. In a particular sense, for some goods in short supply demand is greater than supply. For some goods in good supply, supply is greater than demand. Looked at in long-range terms, there will be very great increase in requirements for all consumer goods in China, and for a certain time now this increase can only be gradual and limited. Therefore, when emphasizing vigorous efforts to increase supply of industrial consumer goods, it is also necessary

to devote extreme attention to increasing those industrial goods that enjoy ready markets and meet the real needs of society. The people's needs are of various kinds and constantly changing. Attention must be devoted both to increasing supplies of traditional industrial consumer goods and to actively developing production of durable consumer goods and household electrical appliances. It is necessary both not to overlook production of the popular goods of dependable quality and the small items that the people need in their daily lives, but also to make efforts to increase production of medium quality and high quality goods to meet needs for raising the people's standard of living. It is necessary to study and analyze the current level of purchasing power and other salient conditions in an effort to forecast accurate quantities of major consumer goods that will be needed and the trend of developments. Take household electrical appliances such as television sets as an example. One must realize that both urban and rural residents universally would like to buy household electrical appliances like television, and one must realize too that the current price of a television set is still very high in comparison with the income of a substantial number of urban and rural residents. Moreover, the popularization of household electrical appliances such as television sets will also require concurrent increase in the television coverage rate, establishment of a maintenance and repair network, and improvement in living conditions etc. Through full analysis of pertinent factors on the basis of investigation and research, and the preparation of realistic estimates of numbers required, we can reduce and prevent blind action. If when developing production of goods in short supply estimates are much higher than actual needs, we will rush into action, work on too large a scale, and blindly expand output. If, in a one-sided seeking after output value and profits, we do not decide to limit production of goods we already know to be in sufficient supply, stockpiling and waste will be created, with the result that the large amount of labor required to produce these goods will not be recompensed by society since they do not meet the people's needs. This goes completely against the basic goal of developing production of consumer goods industries, and is to be resolutely avoided.

Second is the relationship between quantity and quality. We must strive to increase the quantity of products, but improvement in quality must be paramount. As the market supply situation takes an upturn, and as purchasing power increases, the broad masses of people will increasingly focus on the selective purchase of goods that are of fine quality, and of novel color, styling, and variety. At the same time, industrial consumer goods that are of inferior quality, high priced, and stodgy will end up accumulating in inventory while the masses will want to buy fine quality name brand goods, but will be unable to find them. This is the case with bicycles, television sets, and polyester-cotton cloth. In order to solve this problem, general attention must be given improvement of quality. Great efforts must be particularly given to development of high quality name brand products that are of impeccable taste, have been meticulously processed, and are of consistent quality. In the supply of raw and processed materials, priority should be given needs for production of fine quality name brand goods. In the expansion of production capacity, the emphasis should be on plants that produce fine quality name brand goods. Enterprises concerned should be organized, and specialized cooperative division of labor developed with strict application of rules and

regulations and an inspection system, in order to speed increase in the output of fine quality name brand goods. In the marketing of goods, a policy of premium price for premium quality should be followed in order to encourage the advanced and put the spur to the laggards. Quality and style of many of China's industrial consumer goods have been the same for several decades. Such a state of affairs should not be allowed to continue. Organization of forces should be done with regard to quality of materials, technology, equipment and management to tackle and overcome difficulties and markedly upgrade quality of existing goods. In addition, it is necessary to intensify greatly research and development on new products to speed up the upgrading and replacement of products, and steadily provide consumers with new merchandise that is varied in color, style, and variety, and is of very good quality.

Third is the relationship between the building of new enterprises and making full use of existing enterprises. As a result of the insufficient attention given light industry over a long period of time, in many light industries production capacity is seriously inadequate. Consequently, added investment for capital construction and the building of some new light industrial enterprises is completely justified. However, because of limited national financial and material resources, for the next several years there can be no very great increase in investment in light industry. Additionally, old equipment and backward technology are serious problems in light industrial enterprises, so renovation and improvements in existing enterprises are more urgently needed than the building of new enterprises. Technical improvements requiring little investment and that providing quick results not only will make for rapid increase in output, but also will raise quality, reduce consumption, lower costs, and produce striking benefits in many ways. Thus, emphasis must be given planned, step-by-step advancement of technical improvements in light industry, providing well for the required capital, materials, and equipment. Right now some heavy industrial sectors such as the machine industry sector, which does not have enough production to do, can select a group of enterprises for conversion to production of industrial goods used in daily life or join with light industrial enterprises to produce industrial goods for use in daily life that require similar technology. Good performance in this task can mean both no construction of numerous new enterprises and can tremendously increase light industry's production capacity. That is to say that with little increase in supplies of processed and raw materials and fuel, a larger amount of more valuable industrial consumer goods can be produced.

Fourth is the relationship between key cities and ordinary areas. Most of China's light industry is concentrated in coastal cities and in newly developing inland cities. Output value of light industry from 30 large and medium size cities including Shanghai, Tianjin, Beijing, Qingdao, Nanjing, Guangzhou, Shenyang, Wuhan, Chongqing, Changzhou, and Shashi accounts for about 50 percent of the country's output value from light industry. In these cities light industrial enterprises, the levels of management, administration and technology are fairly high, ability to coordinate and integrate is strong, numerous first quality name brand products are produced, profit rates are high, and very many outstanding conditions exist for development of industrial consumer goods production. Today the output value realized from each 100 yuan of fixed assets in light industry for the country as a whole averages

277 yuan. In Shanghai it is 457 yuan; in Beijing 297 yuan; and in Tianjin 26 yuan. By first devoting attention to consumer goods industries in these 30 large and medium size cities to make fullest use of their economic and technical advantages, and by assuring supply to them of needed raw and processed materials, production could be very greatly increased and larger quantities of first rate name brand products produced. In addition, these key cities would have to strive to spur on other cities and areas to develop production of industrial consumer goods. In some cases where conditions do not exist for expansion of production, plant buildings, workforces, and raw materials in other cities and regions could be used for joint operations. Key cities should also shoulder responsibilities for the export to other cities and regions of technology, knowledge, and skilled personnel to help them upgrade their levels of administration and management and their levels of production technology. By establishing close economic and technical relationships of all kinds between key cities and ordinary areas, general development and improvement of consumer goods industries can take place throughout the country.

Fifth is the relationship between planned management and market regulation. Taking the planned economy as the key link with market regulation being supplementary is a fundamental principle in a socialist economy. Healthy and smooth development of consumer goods industries to meet the needs of the people likewise requires obedience to this principle. Some products of consumer goods industries are basic means of livelihood for the people, as for example cotton cloth, woolen fabrics, sugar, bicycles, and sewing machines. Though there are not a large number of such things, their output value accounts for most of the total output value of light industry. All or an overwhelming majority of these goods must be produced and supplied in accordance with state directed planning, and their sale prices must also be set by the state in order to assure stabilization and improvement of the people's standard of living. Among the goods that consumer industries produce are an additional countless variety of items large and small for which accurate estimates are required as to needs and changing needs. Such estimates will not be possible for a long time to come. Were directed planning to be applied to these products, the result would be inability of production to meet needs promptly. It would result in reduced varieties, styles, and colors, and make the goods people need in their daily lives extremely dull. Therefore, guided planning may be used to produce some of these products. Mostly through planned application of leverage, enterprises can be induced to produce to meet society's needs, and once state business department procurement has been satisfied, enterprises may sell all such products as they see fit. For some other products, enterprises may plan production and sales in accordance with market changes and price fluctuations insofar as national policies and laws allow. By allowing the premise of taking the planned economy as the key link and taking advantage of the supplementary role of market regulation, by linking together directed planning, guided planning, and spontaneous market regulation, and by correlating administrative and economic methods, we will be truly able to achieve control without stifling, and liveliness without chaos so that development of consumer goods industries better meets the multifaceted, steadily changing needs of the people.



The foregoing discussed some of the main problems requiring solution in development of light industry itself. Light industry is a sector of the national economy, and it is closely affiliated with other sectors of the national economy. The materials on which the light industrial sector works are provided by agriculture and heavy industry, and its production techniques are produced and supplied by heavy industry. Smooth development of light industry is determined not only by quality of work within light industry itself, but also by whether or not agriculture and heavy industry are able to provide ever increasing amounts of raw and processed materials, fuels, power and technical equipment. Emphasis on development of light industry positively does not mean that agriculture or heavy industry can be ignored. Because heavy industry received too much emphasis in the past, for a short period of time, readjustments in the direction of heavy industry service may be relied upon to solve light industry's need for some raw and processed materials and technical equipment. However, this state of affairs cannot be maintained for a long period of time. If heavy industrial production stagnates for a long period of time or develops slowly, it will be impossible for light industrial production to maintain its present high momentum for a long period of time. Consequently, for the sake of steady growth of light industry, efforts must be made both to hasten development of agriculture and to gradually speed up development of heavy industry. The problems that will have to be solved in this regard are not within the purview of this article's discussion.

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PRESENT STATE OF AND SHORT-TERM PROSPECTS FOR DEVELOPMENT OF CHINA'S COMMUNICATIONS AND TRANSPORTATION

Beijing ZHONGGUO JINGJI NIANJIAN (1982) [ALMANAC OF CHINA'S ECONOMY (1982)]  
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[Text] Under guidance of the various programs and policies that followed in the wake of the 3d Plenary Session of the 11th Party Central Committee, during 1981 the 7 million staff and workers in the communications and transportation sector steadily overcame difficulties and united in struggle for rather good fulfillment and overfulfillment of national transportation plans, substantially satisfying needs in development of the national economy.

In the national railroad, highway, water transportation, pipeline, and civil aviation sectors, last year a passenger volume totaling 3.5 billion, and a freight volume of 2.6 billion tons was completed to provide a contribution to the country's four modernizations.

Preliminary Formation of a Comprehensive Water and Land Transportation Network

Today a comprehensive Chinese water and land transportation network exists in rough form. Following 32 years of communications building, a comprehensive transportation network composed of five kinds of transportation, namely railroads, highways, water transportation, civilian aviation, and pipelines, has been formed of which the mainstays are railroads, sea transportation, and navigation of the Yangtze River. In addition to the northeastern part of the country where a railroad transportation network has been largely formed, this includes six east-west water and land trunk lines within the Great Wall, namely: 1) the Beijing-Baotou, Baotou-Lanzhou, and the Beijing-Shanhaiguan railroad trunk lines; 2) the Shijiazhuang-Taiyuan, the Shijiazhuang-Dexian, and the Qingdao-Ji'nan trunk line; 3) the Longhai trunk line; 4) the Yangtze River navigation artery; 5) the Hangzhou-Zhuzhou [Jiangxi Province], the Hunan-Guizhou, and the Guiyang-Kunming trunk lines; and 6) the Xi River navigation artery.

North-south water and land transportation arteries total six as follows:

1) the north-south sea navigation artery; 2) the Beijing-Shanghai railroad artery; 3) the Beijing-Guangzhou trunk line; 4) the Beijing-Tong-Pukou, the

Taiyuan-Jiaozuo, the Jiaozuo-Zhicheng, and the Zhicheng-Liuzhou trunk lines; 5) the Baotou-Lanzhou, the Baoji-Chengdu, and the Chengdu-Kunming trunk lines; and the Grand Canal between Beijing and Hangzhou.

The above six horizontal and vertical transportation trunk lines connect with 900,000 kilometers of highways and 107,000 kilometers of inland river transportation lines, as well as with 171 civil airline routes, and more than 10,000 kilometers of pipelines. As of 1981, the country's water, land, and air transportation lines covered 1.25 million kilometers, a 6.7 fold increase from the period immediately following Liberation. This is the basic strength of China's communications and transportation today, and it is also a material foundation for future development of communications.

### Three Prominent Problems in Communications and Transportation

Despite numerous accomplishments in communications and transportation work in recent years, as leading comrades in the State Council have pointed out on several occasions, communications and transportation remain a conspicuously weak link in the national economy. This weakness is manifested in the following three ways; One is problems in the transportation of coal, notably in the transportation of coal out of Shanxi Province, but also including transportation of coal out of Henan, Nei Monggol, and Ningxia. Second is transportation problems for imports and exports and domestic trade that passes through coastal ports; and third is sharp increase in problems with passenger travel.

As a result of transportation shortages, coal from some coal producing provinces and regions cannot be promptly shipped. Ningxia and Nei Monggol have no choice but to "set production on the basis of transportation." It has become a natural state of affairs for some coal mines to store coal for long periods of time. Meanwhile, quite a few industrial plants in Shanghai, Jiangsu, Zhejiang, and Guangdong have frequent emergencies for lack of adequate coal supplies.

Because coastal port handling capacity is inadequate, ship and cargo delays are serious. This not only obstructs the transportation of goods in internal and foreign trade, but also damages China's reputation.

In passenger transportation, "difficulties in making a journey" have become an acute social problem. Not only is it difficult to buy tickets, but trains, buses, and ships are frequently overbooked, sometimes by as much as 30, 40, or even 50 percent.

### Reasons for the Three Prominent Problems

Appearance of the foregoing three prominent weak links is attributable to the country's institution of policies of opening up to the outside world, and enlivening the domestic economy since the 3d Plenary Session of the 11th Party Central Committee. This has brought about an increase in industrial and agricultural production and has promoted the exchange of goods, with the result that conflicts that cannot be sorted out have cropped up in the course of development. It is also attributable to imbalance between the distribution

of China's resources and the distribution of its industry. For example, coal is a major resource for China's industrial production, and coal accounts for almost 40 percent of the freight that railroads haul. But underground distribution of coal resources is very unbalanced. Of the 600 billion tons of coal reserves so far prospected, about one-third are located in the single province of Shanxi. Furthermore, almost two-thirds of the remaining coal reserves of other provinces and regions are located in north China, which accounts for one-third of the present output making it the country's major coal producing base. Large quantities of coal have to be hauled to east and northeast China. Meanwhile, nine southern provinces and regions, plus Shanghai, are the country's major bases for industrial production, but coal reserves in those areas amount to only 5.8 percent of the country's total. In addition, local coal mining produces inadequate supplies in places in east China, and northeast China that need coal urgently. This inevitably produces a situation of coal from the west being hauled to the east, coal from the north being hauled to the south, and coal being hauled beyond the Great Wall for transportation of coal over long distances. Not only now, but for a considerable time to come, this situation will continue to exist. This is a major reason for the hectic situation in the hauling of coal at the present time.

More than 90 percent of the nation's foreign trade goes through coastal ports. Most import and export goods are both concentrated in and broken down for shipment in coastal provinces and municipalities. Because of the rapid development of foreign trade during the past several years, berths are insufficient, so the problem of ships accumulating in ports has not been fundamentally changed. During the time of worst ship accumulation in 1981, only 350 to 360 ships were in port. Though balanced planning of foreign trade shipments, and coordination among departments concerned was intensified, and improvements made in the concentration and dispersal of goods to moderate port congestion subsequent to May 1981, the fundamental problem of an inadequate number of berths was not solved. The situation today is that while one ship is loading or unloading in port, another one is forming up outside the harbor to prepare to load or unload. This is a major reason why coastal port foreign trade transportation is currently hectic.

As for passenger transportation, accompanying further enlivening of urban and rural economies and improvements in the people's livelihoods, the volume of passenger traffic has increased sharply in recent years. China's population is concentrated largely in eastern coastal areas; consequently passenger transportation is also relatively concentrated in eastern areas. The Beijing-Guangzhou, Beijing-Shanghai, Longhai, Beijing-Shenyang, Hangzhou-Zhuzhou, and the Qingdao-Ji'nan railroad lines, in particular, are lines carrying a high volume of passenger traffic, while the same lines also are the ones that are busiest and most hectic with hauling coal and foreign trade goods. There is also an extreme shortage of long distance highway buses. In China today, there is but one bus per 2,000 people. Passenger transportation capacity is far from meeting needs. Thus, the foregoing three prominent problems interact with each other, passengers vie with freight, and conflicts become increasingly sharp.

In order to overcome the hectic situation in communications and transportation, in recent years the State Planning Commission, the State Economic Commission, the Ministry of Railways, the Ministry of Communications, and the Civil Aviation Administration made repeated studies and proposed a series of actions for solution.

#### Eight Actions for Fundamental Solution

In the government work report that Premier Zhao Ziyang made to the Fourth Meeting of the Fifth National People's Congress, he said, "On railroad sections on which transportation capacity is currently inadequate and at ports at which cargo handling capacity is currently inadequate, technical improvements must be strengthened first. Communications and water conservancy departments are to cooperate in overhauling inland river shipping and vigorously upgrade shipping capacity." "For a certain number of years, central government investment in construction should give consideration first to communications including the need for port construction." Acting in the spirit of this report, in planning its work the Ministry of Communications placed coal transportation and transportation of foreign trade imports and exports in first place. They devoted attention to comprehensive planning of the building of communications, provided for overall balance, took firmly in hand construction pseed, and made full use of water transportation. In the use of capital construction funds, it devoted attention to key points, putting them to use first on matters of greatest importance to the national economy and the people's livelihood for active solution to the three prominent problems in communications and transportation. Only by making vigorous efforts to solve problems in coal hauling, foreign trade transportation, and passenger transportation would it be possible to turn around the passive situation in communications and transportation as a whole, make goods flow smoothly, and give impetus to the healthy development of the national economy.

1. Hastening Technical Improvements on Major Railroad Coal Hauling Truck Lines and Building of New Lines. First came efforts to hasten electrification of the double track between Beijing and Qinhuangdao, and to speed up electrification of the Fengtai and Shacheng to Datong line as well as the Beijing-Tong, Pukou line. Second was hastening electrification of the Shijiazhuang-Taiyuan line to be completed by the end of this year. At the same time strong attention was given double tracking of the Qingdao-Tianjan line and construction of a single line from Lancun to Yantai. Third was technical improvements on the Longhai line. On the western end of the Longhai line in the section between Zhengzhou and Lanzhou, the line was to be electrified, and on the eastern end between Zhengzhou and Xuzhou, the line was to be double tracked. Improvements were to be made on the single track between Xuzhou and Lianyungang in connection with expansion of the port at Lianyungang in connection with expansion of the port at Lianyungang. Fourth was multiple tracking of the section of the Beijing-Guangzhou line on the section between Hengyang and Guangzhou, completing it on time. Fifth was building of a new line from Xinxiang in Henan Province, to Heze, Yunzhou, and Shandong Province. Possibly in the future, this could be extended westward to connect Houma and Linfen making this a new line for carrying coal that connects southeastern Shanxi and northern Henan with seaports. Sixth was

building a feeder line between Daye in Hubei and Jiujiang in Jiangxi, while also improving the old railroad line between Jiujiang and Nanchang.

Improvement of old lines and building of new lines would have to follow the principles of formulation of overall plans, improvements over a period of time, construction in sections, and developing capacity in stages thereby achieving prompt effectiveness in transportation.

2. Energetic Development of Oceangoing, Coastal and Yangtze River Shipping. Developing of water transportation requires planned, step-by-step building of ports, dredging of channels, and development of ships' crews.

As of the end of 1981, in coastal ports under jurisdiction of the Ministry of Communications were 330 large, medium, and small berths, 147 of which were deep water berths for 10,000 ton class ships. This obviously did not meet needs of ever increasing foreign and domestic trade. In addition to existing plans for building of four coal ports at Qinhuangdao, Shiqiusuo, Qingdao, and Lianyungang, timber piers at Tianjin and Shanghai, and container piers at Tianjin, Huangpu, and Zhanjiang during the "Sixth 5-Year Plan," at the two ports of Nanjing and Zhenjiang on the Yangtze would be key construction of piers for 10,000 ton class ships, expansion of the port at Wuhan, and new construction of the port at Zhicheng. This would draw some of the coal hauling from southern Shanxi and northern Henan southward to the Yangtze for movement to east China in order to reduce pressures on railroads. At the same time the Yangtze shipping management system would be restructured on the principle of bringing into play the enthusiasm of provinces and municipalities, and a separation of government and business.

Active development of a blue water fleet so that a Chinese fleet will be able to take over China's foreign trade shipments as quickly as possible. Building of a blue water fleet requires a program combining the large, the medium size, and the small.

In order to develop energetically and make full use of water transportation, simultaneous with the building of ports by specialized communications units would be promotion of the idea that cargo owners should themselves build the needed piers, and that localities cooperate in providing ships. Large and medium size plants, mines, and enterprises (such as the Wuhan Steel Works), and warehousing departments along the sea and along the Yangtze River should build piers for their own use. They should build them, manage them, and use them themselves. However, a system of unified port management rules and regulations should be instituted, communications departments providing technical guidance. Additionally, provinces and municipalities along the sea and along the Yangtze should energetically ready fleets of ships, and make full use of water transportation. Departments specializing in communications should actively support these activities.

3. Construction of Communications Arteries in Southwest China. Southwest China has abundant resources awaiting development. In developing the southwest, communications and transportation must come first. Because communications are inconvenient today, coal from Liupanshui and phosphate rock from

Yunnan and Guizhou cannot be promptly shipped out. In this connection, it is necessary, first of all, to hasten the electrification of the Guiyang-Kunming, the Hunan-Guizhou, and the Sichuan-Guizhou railway lines, building in stages in order to be able to haul more coal. Second is technical improvements on the Liuzhou-Litang, and the Litang-Zhanjiang railroad to increase its cargo handling capacity. Third is development of the Xi River with the building of a port at Guixian, and dredging of the Guiping channel. Following construction of these three arteries, the communications picture in the southwest will be vastly improved.

4. Dredging of the Grand Canal Between Beijing and Hangzhou. Dredging of the section of the Grand Canal between Jining and Hangzhou is most important. That section totals 834 kilometers in length, and is basically navigable in its entirety year-round. The section of the canal in northern Jiangsu Province averages a depth of more than 2 meters, and conditions for shipping are superior. By dredging the channel, adding a pair of navigational locks, one on each side, and enlarging ports, 1,000 ton class ships can pass. Shipping capacity in the north Jiangsu section can reach 40 million tons and, following dredging of the Grand Canal in southern Jiangsu, initially 300 ton ships will be able to pass.

5. Railway transportation must develop in the direction of heavily loaded trains. In addition to the building of highways and ports to improve transportation, firm grip must be taken on technical improvements in communications facilities, and use of new techniques promoted. Today 77 percent of China's railroad locomotives are steam locomotives, one-third of which are products of more than 30 years ago, and they are of more than 30 different makes. This shows that technical improvements of railroad transportation are necessary. In recent years some industrially developed countries have been actively using electric power or internal combustion to pull, and heavily loaded trains to transport large quantities of loose freight such as coal, and mineral ores with remarkable results. Their experiences merit our serious attention. Quite a few experts have suggested the workability of schemes for using heavily loaded cars to carry coal on China's existing railroad routes and lines. However, solution to problems such as large freight cars, buffers, turn tables, couplings, and braking equipment must be solved. Additionally, technical improvements must be made using large 60 kilogram steel rails. It will also be necessary to manufacture bulk transportation cars, and refrigerator cars.

6. Truck Transportation Must Develop Toward Bigness and Specialization. Today China has 1.3 million civilian trucks, more than 90 percent of which are medium size, general use, gasoline-fueled trucks capable of carrying 4 to 5 tons. Their capacity is small, and they consume a lot of gasoline, thus impairing the advantages that can be derived from truck transportation. Thus, it is necessary to plan step-by-step use of large diesel trucks to replace them. Additionally, in view of the increasing specialization of industrial production, special vehicles such as refrigerator trucks should be energetically produced.

7. Upgrading of the Proportion of Washed Coal and Dressed Ore To Reduce Useless Hauling. Transportation of washed, concentrated coal saves one-fifth on railway transportation in comparison with the hauling of raw coal. The ratio of China's washed coal today accounts for only 18 percent of total coal output. In foreign countries the ratio averages 90 percent (87 percent in the United Kingdom, and 94.4 percent in Japan). With increase in the ratio of machine mined coal in China, the ash and clinker rate of coal stands at about 20 percent. Because of this situation alone, the railroads annually transport 17 million tons for no purpose at all, and more than 60 million yuan is spent annually in unnecessary transportation charges. This is a very great waste. If the wash rate for uniformly allocated coal were increased 30 percent, 50 million tons less would be shipped each year, and the hiatus in coal transportation would be greatly ameliorated. Likewise, in the transportation of iron ore and phosphate rock, similar measures should be taken to ship dressed ore to increase the usable rate, to transport purer ore, and to reduce waste of transportation.

Make the most of civil aviation's advantages, and tap air transportation's potential. China's civil aviation passenger planes fly an average 3.1 hours daily, which is only 30 to 40 percent the average flying rate in foreign countries. Were it possible to double the number of flying hours while raising the passenger utilization rate from its present 62 percent to 80 percent, an additional 5.5 million passengers per year could be transported over long distances thereby relieving pressure on some other long distance passenger transportation arteries.

#### Five Stopgap Measures

1. Active Organization To Spread Freight Movements. Because of various factors such as ignoring use of water transportation and inequitable transportation charges when transportation was built in the past, water transportation that should have been used has not been used. The railroads have to carry too much of the load. In hauling passengers and freight, railroads account for 60 and 50 percent respectively of passengers and freight hauled by all means of transportation. Today railroads move about one-fourth of all freight moved a distance of less than 100 kilometers, while the load rate for trucks is only 55 percent for a serious waste through deadheading. Coastal shipping and Yangtze River shipping as well as civil aviation could all carry more. In recent years the State Economic Commission and departments concerned have continued study to formulate plans to divide up transportation of passengers and freight, and to formulate plans for a division of labor for short hauls so as to make fullest use of the role of all forms of transportation.

2. Increase in Train Make-Up and Tapping Potential for Passenger Transportation. Today China's long distance passenger trains consist of 13 cars. Passenger volume calls for making up larger trains. If the number of cars per train were increased from 13 to 15, tens of million more passengers could be carried annually for a moderation of the passenger transportation shortage. The make-up of freight trains likewise requires action to increase the number of cars. This is an important measure that requires little spending of money, but produces quick results.



3. Active Promotion of Lightering. Active development of lightering is an effective way in which to make up for the present shortage of berths and expand port cargo handling capacity. Lightering may be divided into lightering within the harbor area including partial unloading to lighters of large ships at buoys and riding at anchor in the outer roads where circumstances permit. Second is use of lighters on long inland river voyages for transfers of cargo. Third is use of lighters and some old ships to serve as warehouses for a saving in land for building and investment. In 1981, one-third of all cargoes in the port of Shanghai were lightered. Their experiences should be energetically promoted in other ports.

4. Increase in the Numbers of Hatches for Loading and Unloading Ships. Nowadays an average of between 160 and 200 ships wait outside harbors daily, only less than 40 percent of them being able to tie up at piers to load and unload. Working hatches on ships average fewer than 2- $\frac{1}{2}$ , with the result that the ship loading and unloading rate cannot be increased. Were it possible to improve management of production to increase the number of operable hatches per ship to an average of three, with simultaneous loading and unloading of each ship through three hatches, the loading and unloading rate could be increased by at least 15 percent, and ship delays would be reduced.

5. Active Launching of Combined Railroad, Highway, Water, and Civil Aviation Transportation. Railroad, highway, water, and civil aviation transportation should be dovetailed for relay transportation. This would be a very effective measure for strengthening coordination and cooperation among transportation sectors, for tapping transportation potential, and for improving transportation services. In recent years great development has taken place in the linking of transportation with more than 20 large and medium size cities in the country setting up joint transportation service companies. Cargo included in joint transportation plans amounts to 60 million tons annually for an annual saving to cargo owners of 200 million yuan in expenses. In the transportation of passengers, some places have commenced joint passenger ticketing and complete journey ticketing services. In the future, linked transportation should be put on work agendas to make it more widespread and pervasive.

Additionally, much effort should be devoted to containerized shipments and loose shipments. Container shipments, which have been termed a major revolution in transportation, are just getting underway in China. Now the railroad, water transportation, and highway sectors have begun container shipments. In 1981 the country's railroads carried 2.4 million containers of container cargoes, and the country's railroads own 100,000 containers. The Ministry of Communications has opened 11 international container cargo shipping routes including those between China and the United States, China and Japan, and China and Australia, and has shipped 700,000 tons of containerized cargo in 1981. Nevertheless, the proportion of container transportation in China is still miniscule. If China's container transportation is to be developed, program and policy problems in development of container transportation will have to be thoroughly solved, and obstacles in the way of its development swept away for more healthy development.

Cargoes shipped loose in large quantities such as cement, grain, and chemical fertilizer make for savings in packaging and a lowering of costs, and since China already possesses a certain amount of experience in transporting them, such shipments should be further expanded.

The communications and transportation sector is a service sector that affects countless households, which is all the more reason why it should give particularly serious attention to building of spiritual civilization, to being polite and courteous, and to assuring safety and quality in the transportation of passengers and freight, in order to make a greater contribution to building of the four modernizations.

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EMPHASIZE THE PRODUCTION, ACCUMULATION AND UTILIZATION OF WEALTH, ACCELERATE  
THE DEVELOPMENT OF SOCIALIST MODERNIZATION

Beijing ZHONGGUO JINGJI NIANJIAN (1982) [ALMANAC OF CHINA'S ECONOMY (1982)]  
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[Article by Wang Bingquan [3769 0014 0051]]

[Text] Thanks to the policy of further readjustment, restructuring, reorganization and improvement and the efforts in all fields in its implementation, the state's financial situation has markedly improved in recent years. In 1981, financial deficits dropped from 12.7 billion yuan in the previous year down to 2.5 billion yuan, and a basic balance between receipts and payments was achieved. This achievement was remarkable. However, we must be aware that this basic balance was the result of curtailed expenditures and not a stable one, and that the state still faces considerable financial difficulties. Since this is still the period of readjustment, the increase in production cannot be very rapid, and it will take some time for economic results to be improved. The annual increase in financial revenues cannot be very large, and in these several years, we have to make the necessary preparations for future economic development. A certain scope has to be maintained for capital construction; some increase in investment is needed in transportation; and the development in cultural, educational, public health and scientific undertakings has to be continued. This will create a sharp contradiction between our resources and expenditures. The problem of financial balance is still a prominent one.

What are the basic methods to solve financial problems? The solution is to fully arouse enthusiasm in all fields in increasing production, practicing economy, opposing waste and improving the economic results. In his report on the work of the government at the Fourth Session of the Fifth National People's Congress, Premier Zhao Ziyang said: "People in all trades, from top to bottom, must perfect ways to acquire, accumulate and use funds." Conscientious implementation of this spirit and paying attention to the methods of acquiring, accumulating and spending funds are of great significance in overcoming the present financial difficulties, bringing about a fundamental turn for the better in our national economic situation and accelerating the socialist modernization.

(I)

Among acquiring, accumulating and spending, the acquiring of funds is the foundation. If there is no economic development, the sources of funds cannot be increased and the financial problem cannot be basically solved. The so-called method of acquiring funds means that we have to broaden our vision, encourage production and increase the sources of funds. A lot has to be done about this. For example, the increased income of peasants and workers will increase the demand for articles for daily consumption; however, our production of goods in demand is not enough. Again, some enterprises are now operating under capacity and many young people are waiting for jobs; however, very few people are willing to perform certain services, such as food and drink, tailoring and repair, which are urgently needed in society. As for the means of production, there is a promising future for the production of more and better small farm tools, chemical fertilizers, and insecticides for the countryside; for the production of new technical equipment for technical transformation in light industry; and for the production of more goods for the international market.

The development of production is the basic way to increase revenues. Provided objective conditions permit, we should strive for increased production and maintain a certain level of development in production. However, instead of the one-sided quest for output, output value and speed regardless of quality and varieties, we must strive for a realistic and unexaggerated speed and insure increased income along with increased output. In the past, we had the experience of "good news from industry, sad news from commerce, overstocking of goods and scarcity of revenue," which mean an empty reputation but real harm. We must not repeat this stupid performance. However, since the national economy is in the stage of readjustment, the increase in revenues from increased production is necessarily limited. In order to increase revenues, therefore, we must not confine our efforts to production; it is even more important that we should devote our efforts to tapping the resources of the existing enterprises, practicing economy, overcoming waste and improving the economic results. This method is not only necessary, but also entirely practicable for us to increase our resources and solve the financial problem. At present, there are the serious problems of high consumption and production costs, poor management and serious waste in many enterprises; and two-thirds of the consumption indices for fuel, power and raw materials among the present enterprises have not returned to their better standards in the past. There are 13,000 industrial enterprises incurring losses, and the amount of circulating funds used in every 100 yuans' output value is 11 percent higher than in 1965. If these defects can be overcome and the enterprises' potential can be tapped, there will be a great increase in social wealth. Through readjustment, we will close, suspend, merge and retool those enterprises now having high consumption, producing goods of poor quality and incurring heavy losses. We will exercise more active control over the remaining enterprises and adopt correct policies to encourage them to look for wealth through technical transformation centering around energy conservation; through the comprehensive utilization of resources and intensive processing; through the improvement of product quality and varieties; and through better management. At the same time, we should make an effort to promote commodity circulation,

to send goods to the countryside, and to do business with the 800 millions of peasants. In short, we should pay great attention to the enterprises and encourage them to increase production, practice economy, tap their potential and close their loopholes in order to increase the material social wealth and to increase the sources of funds. Financial problems can be easily solved if material social wealth and financial resources are increased. After setting things right and the earlier economic readjustment and restructuring, many regions and departments are now more concerned with the acquisition of funds, and there are a number of enterprises whose reduced output does not bring about any reduction of income. On the contrary, some of them have managed to increase their income despite their reduced output. On the whole, however, the sources of funds are still limited, since many obstacles to the acquisition of funds have not been removed. It is therefore necessary for us to further emancipate our minds, break through the old conventions, carefully study the new developments and new problems, and then explore more avenues for the acquisition of funds.

## (II)

On the basis of developing the economy and increasing the sources of funds, we should also stress the method of accumulating funds. How much of the material social wealth created by the broad masses each year should be accumulated by the state's financial institutions and how should it be accumulated are important questions of policy. These questions involve the issue of correctly handling the relationships not only among the state, the collective and the individuals, but also the relationship between the state and the enterprises. If the portion to be retained by the enterprises will be small; and if the portion of accumulation is large, the portion of consumption will be small; and vice versa. Therefore, we must have correct policies and rational channels and methods for the accumulation of funds in order that the accumulation will be reasonable and the distribution will be appropriate and in many different ways.

Since the 3d Plenary Session of the 11th Party Central Committee, the state has adopted a series of measures to improve the people's livelihood, and spent more than 140 billion yuan in this direction during the past 3 years. The income of the urban and rural population has increased and their standard of living has been raised, much to the satisfaction of the broad masses. In the future, along with the development of production and the gradual improvement of the state's financial situation, the increase of these funds should continue in order to further improve the people's livelihood. This is the basic goal for our development of production. However, in spite of the state's financial difficulties and shortage of funds, we still have to consider the problem of construction. Therefore, the improvement of people's livelihood cannot be too rapid or on too large of a scale. This point should be clearly explained to the masses. In the past 3 years, a total of more than 28 billion yuan was retained by the enterprises. This has produced good effects in arousing the enthusiasm of the localities, enterprises and the broad masses of workers and staff members, and in stimulating the economy. At present, we must, on the one hand protect the legitimate rights of the enterprises; we cannot stress accumulation because of financial difficulties and then

backtrack by revoking with oversimplified means the financial power which has been delegated to the lower levels. On the other hand, we must carefully sum up the experiences in restructuring and protect the state's interests so that the state's revenues can be increased along with the increase in output value and profit; we cannot unreservedly give benefits to the enterprises and thus reduce state revenue merely because of the need to expand the enterprises' decisionmaking power.

In the accumulation of funds, we must pay attention to the use of flexible and diverse channels and methods in addition to the adoption of correct policies of fund accumulation. Since ours is a socialist country, social reproduction is carried out in a planned and proportionate way on the basis of public ownership of the means of production, and most of the output value has to be distributed in a unified way and on a social scale. This is a decisive factor in the use of the state's financial institutions as the main channel of fund accumulation. The profits delivered by state-run enterprises are the main source of state revenue as well as an important means of fund accumulation. All state-run enterprises must abide by the relevant policies and regulations by keeping and using the retained funds well, and by handing over their profits due completely and promptly. The use of such illegal methods as reduction of the base figure at will or receiving "double pay" to undermine state finance must not be permitted. Another important method for the state to accumulate funds through financial means is taxation. We must strengthen our work on the levy and control of taxes. The organs should be consolidated and properly staffed, and all taxes due must be collected according to the state's tax policy. At the same time, some types of taxes should be restored and some new taxes should be introduced according to the conditions of economic development in order to increase the sources of taxes. The reduction of remission of taxes should be carried out within the limits prescribed by state regulations, and no locality or individual can decide on their own reduction or remission beyond these limits. Unreasonable reductions or remissions of the past should be corrected through tax readjustment so as to guarantee the sanctity of the state's tax policy.

In the past several years, economic restructuring and the implementation of various economic policies have resulted in the increase in revenues for the localities, enterprises, communes, production brigades and the urban and rural population, and a shortage of funds for the central treasury. Under such conditions, we should on the one hand collect the idle funds in the society through the state's financial channels, such as the floating of treasury bonds. On the other hand, we should give full play to the role of banks for the same purpose so that the idle funds in the hands of enterprises, communes, production brigades, and the urban and rural population can be pooled as much as possible to be used in national construction. We should be careful that the construction to be financed with these funds is confined within the limits of our capability. It should be included in state plans and the comprehensive balance so as to guard against the overextension of the capital construction front which will not produce adequate economic results.

In addition to the channels of state finance and bank credit for fund accumulation, we should also formulate correct price policies and measures. We must

protect the consumers' interests by stabilizing the market prices, strengthening the regulation and control of prices and forbidding price increase at will or in disguise. The procurement prices for agricultural and sideline products should also be stabilized, regulated and controlled. Raising the prices of agricultural and sideline products, lowering the base figure of procurement, and enlarging the scope of negotiated prices at will and in disregard of state regulations will result in an increase in the state's price subsidy. Under the present conditions, this is a serious problem affecting the state's accumulation of funds. All regions and departments must act in accordance with state regulations and through the readjustment and restructuring, correct the irregularities in subsidy which are either transgressing the limits of policies or obviously irrational.

### (III)

The improved method of spending means rational distribution and frugality in the use of funds in accordance with state policies and plans so that these funds can be spent to the best advantage. We cannot accomplish anything without funds; however, if we are not good at spending them, nothing can be accomplished either. In the past, we spent money without paying any attention to the economic results. All localities, departments and units had fairly easy access to funds; however, they rarely gave thought to the method of spending them and had even less economic or legal responsibility for them. As a result, the large outlays brought poor economic results, and huge sums were even spent for nothing. At present, the phenomenon of spending money regardless of economic results and of serious losses and waste is still quite common in the fields of production, capital construction and circulation, and among the administrative units. For example, even though we are short of energy and raw materials, some enterprises are still producing goods of poor quality and high prices. Since these goods can neither be sold nor made use of, they have to be kept in the warehouses indefinitely until some of them have to be written off as total losses. This is a waste of not only energy and raw materials, but also money. Another example is that some capital construction projects calling for heavy investments have been summarily decided on and hastily started without the feasibility study beforehand. As a result, some of them have to be halted halfway because of certain problems, while others, though completed, cannot be commissioned, or can only function irregularly with poor economic results because of problems with energy, transportation or raw materials. These examples show that an improved method of spending is the key to better investment returns and the sustained increase in production and income as well as to real benefits from construction to the people. Therefore, we must conscientiously carry out the principle of accomplishing more by spending less and achieving optimal economic results with minimal consumption. Particularly because of the present large and rapidly growing population and the limited construction funds, we must be sure that money is spent to the best advantage. We must conduct investigations and study, carry out meticulous calculations and strict budgeting, and make rational arrangements before spending money on any project in order to eliminate waste and avoid fruitless expenditures. At the same time, we have to set up a system of economic responsibility for the use of funds, whereby the circulating funds used by enterprises and the investment on capital construction projects--which are capable

of repayment--have to be repaid, in order to avoid spending in the way of "eating from the same pot." Those who have spent money to good advantage should be commended or rewarded, while those who have spent money with poor results should be criticized and educated. Proper disciplinary action should be taken against those who are responsible for losses or waste; in serious cases, they should be legally prosecuted. If this is possible, it will be entirely practicable for us to solve the problem of waste in production, capital construction and circulation and thereby increase our income and decrease our expenditures by 10 billion yuan or even more each year.

#### (IV)

In improving the methods of acquiring, accumulating and using funds, the important thing is to arouse the enthusiasm of the broad masses of cadres, technicians and workers. We must conscientiously implement the principles of distribution according to work done and of material benefits and let the localities, enterprises and workers tap their resources and create more wealth for the society. As a matter of policy, we should first let them feel that they have something to gain. If all the benefits are taken over by the state, it will affect the enthusiasm of the localities, enterprises and workers. This has been the cause of "nobody caring to pick up the gold spread all over the ground." On the question of distribution between the state on the one hand and the localities and enterprises on the other, we have adopted certain measures conducive to the enthusiasm in various fields, and will continue to improve them along with the changes in the economic situation. This is one aspect of the question. Another aspect is that while stressing the principle of socialist material benefits, we should at the same time stress ideological and political work so that both the principle and the work can be well combined. If we only stress putting politics in command and neglect the principle of material benefits, we will dampen the enthusiasm of the broad masses of cadres and workers. This is certainly inadvisable. However, if we only stress material benefits without ideological and political work, people's enthusiasm cannot be sustained, and they may be led on to the path of "more benefit, more work; less benefit, less work; and no benefit, no work." Through ideological and political work, we will teach people the correct way to handle the relationship between the state, the collective and the individuals, and help them to cultivate a keen sense of responsibility as masters of the country and to generate their socialist enthusiasm in construction.

We should have a strategic insight and an overall concept in stressing the acquisition, accumulation and use of money. We must also firmly uphold the principle of the leading role of planned economy and the supplementary role of market regulation. The state, the localities and the enterprises should invariably study the ways of acquiring, accumulating and spending money for the purpose of accomplishing the state's socialist modernization program. Therefore, we must bear in mind the partial as well as the overall interests and the immediate as well as the long-range benefits. In case of any contradiction between the partial and the overall interests or between the immediate and the long-range benefits, the overall interests and long-range benefits should prevail. Some undertaking, such as a small cigarette factory, a small textile mill or a small oil refinery may produce some benefits and



increase the income from the standpoint of an enterprise or a locality. From the standpoint of the overall situation, however, this is a case of the small competing with the large and the backward competing with the advanced. In the final accounting, the gains cannot compensate the losses. We must refrain from doing any such thing. Some undertakings, such as water conservancy, forestry, transportation and energy construction, calls for heavy investments and cannot produce benefits for some time; yet, in the long run, they are indispensable to the national economic development and must be carried out. While stressing the proper ways of acquiring, accumulating and spending money, we must teach the cadres to bear in mind the final accounting, to be concerned for the overall situation, and to review the past and anticipate the future. Under state guidance, the principle of the leading role of planned economy and the supplementary role of market regulation must be upheld. Only the methods of acquiring, accumulating and spending money thus worked out can be proper and be able to produce good economic results.

Effective financial supervision and strict enforcement of financial and economic disciplines are necessary in improving the methods of acquiring, accumulating and spending money. At present, violations of these disciplines are quite prevalent. Examples of these violations are the diversion of profits--which should be handed over to the state--to other uses; the evasion of taxes in various forms; dividing state property among people privately, and stealing or plundering state property; turning the benefits for the state into benefits for the units and privately installing "small cash counters"; indiscriminate payments of bonuses, allowances and subsidies; bribery, throwing banquets and sending gifts, smuggling and selling smuggled goods, graft and embezzlement, speculation and profiteering; and so forth. The existence of these problems are not only disturbing the social economic order, jeopardizing the state's economic construction, and increasing the state's financial difficulties, but are also corroding the cadres and people, ruining the party's work style and the social atmosphere, impairing the state's sovereignty and hindering the development of spiritual civilization. Based on our experiences in the past 2 years, we must strengthen the macroeconomic restrictions, the supervision and the legal system while trying to invigorate the microeconomy. The law violations and other criminal activities in the economic sphere must not be overlooked or taken lightly. Instead, we must take effective measures to prevent tax evasions, to stop all illegal acts, and to crack down on economic crimes. No condonation of any kind can be permitted.

We believe that as long as we conscientiously implement the financial and economic policies of the party and the government, fully arouse the enthusiasm in all fields, rely on the broad masses in improving the methods of acquiring, accumulating and spending money, and strive to increase production, practice economy and improve the economic results, we can certainly overcome the present financial difficulties gradually and achieve even greater success in socialist construction.

By Wang Bingquan, minister of finance

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## TECHNICAL TRANSFORMATION OF EXISTING ENTERPRISES IS A STRATEGIC TASK FOR CHINA'S ECONOMIC DEVELOPMENT

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[Article by Ma Hong [7456 3163]]

[Text] In his "Report on the Work of the Government" delivered at the Fourth Session of the Fifth National People's Congress, Comrade Zhao Ziyang laid down 10 important principles for future economic construction, and one of them is to carry out technical transformation step-by-step in key units and to make the maximum use of existing enterprises.

In the past, as we all know, we mainly relied on the increase in new capital construction projects for expanded reproduction and overlooked the technical transformation in the existing enterprises. In the future, we cannot use the old methods for expanded reproduction and should, instead, mainly rely on the role of the existing enterprises after technical transformation. This is a new trail for developing the productive forces in our country with greater, faster, better and more economic results and a new strategy for developing our country's socialist economy.

### The Urgent Need for Technical Transformation Step-by-Step in Key Units

While laying the foundation for industrialization in the past, it was necessary that we had to rely on newly built enterprises for expanded reproduction. Now that we have 400,000 enterprises in industry and transport, we will have to rely chiefly on the technical transformation of existing enterprises and on their initiative for expanded reproduction in the future. Instead of taking the old road of spending a great deal of money with poor results, we should blaze a new trail which will yield faster results and bigger economic returns and call for small investments. In other words, instead of relying chiefly on building new enterprises for expanded reproduction as we did in the past, we will adopt the policy of using technical transformation as the chief means of expanded reproduction.

At present, carrying out technical transformation step-by-step in key units will enable us to change the technical features of the existing enterprises and to increase the productive capacity with relatively less investments. We will also be able to enliven the machinery and metallurgical industries which

are now operating under capacity. This method will not only help us to overcome the economic difficulties but also accumulate the resources for accelerating economic development in the future. Therefore, carrying out technical transformation step-by-step in key units is an important strategic task in basically improving our country's financial and economic conditions, in modernizing the existing enterprises, in gradually shifting the entire national economy onto a new foundation of technology and in bringing about a vigorous development of our economy. We must fully recognize the great significance of technical transformation.

After the founding of the People's Republic, thanks to the efforts of people of all nationalities in the country, we have established an independent and fairly complete industrial system. The enterprises in industry and transport are in possession of fixed assets amounting to more than 440 billion yuan according to their original value, and part of their technical equipment is fairly advanced. The material and technological foundation of our national economy is now of a fairly large scope and at a fairly high level. This is also a reliable material and technological foundation for the realization of the four modernizations.

For a long time, however, because of the influence of the leftist guiding thought and the one-sided quest for speed of increase in industrial output value, we have been biased toward the building of new enterprises and have neglected the technical transformation for the enterprises already built. At the same time, we equated the so-called "tapping of resources, renovation of equipment and technical transformation" with technical transformation. For this reason, the funds used on "tapping of resources, renovation of equipment and technical transformation" accounted for less than 40 percent of the total investment on fixed assets, and the vast majority of these funds were used on the construction of new factory buildings and acquiring new equipment to increase the productive capacity and the output value. Only a very small portion of these funds were actually spent on technical transformation. The completed factories were "only used without upkeep" and "fishing had to continue until the pond becomes dry." Thus the equipment and the technology became obsolete and the means of measurement became inaccurate. The backwardness of products was quite serious.

The way to assess the technical conditions of our national economy involves a fairly complex problem on which different views have been expressed. Our view is that although we have some advanced technical equipment, advanced technology and a corresponding number of advanced products, our technological progress as a whole has been very slow. There has been no basic change in the projects completed during the First 5-Year Plan. We are lagging far behind foreign countries.

According to an analysis of the technical equipment in our existing enterprises, based on a survey of their fixed assets, those obtained in the 1950's and 1960's account for approximately one-third of the total original value of fixed assets; those obtained in the 1970's are slightly more than 60 percent; and all the rest were left over from Old China. After some rough adjustment based on the increase in costs, the fixed assets obtained in the 1970's are less than one-half of the total in value.

The main portion of fixed assets obtained in the 1950's and 1960's belongs to the large number of projects undertaken during the First 5-Year Plan, and includes the projects imported from foreign countries and those built with equipment designed and manufactured by ourselves under the guidance of foreign experts for more than 400 enterprises. These enterprises still remain as the backbone of our industrial production. Their technical level was in those days generally that of the 1950's, and, in some cases, that of the late 1940's. Generally, they were at that time fairly advanced. Throughout the past 20 years, the purpose of these enterprises was to increase their output through the expansion of productive capacity. Little attention was paid to the improvement of technology and quality or the increase in varieties and output through technical transformation. Therefore, there has not been much change in their technical features. Many of the items imported at that time have now become obsolete. Although they are still in use after many major repairs, their original precision has been lost; their energy and material consumption is high; and with their low efficiency, no advanced product can be produced. A large portion of the equipment acquired later was crudely made during the "Great Leap Forward" and the 10 years of turmoil, with very backward technology.

Let us look at the machinery industry from several typical enterprises. Among the machine tools mainly used in the Changchun No 1 Motor Vehicle Plant and the Luoyang Tractor Plant, more than 60 percent have been in service for 20 years. Many of them have undergone 2 or 3, and some of them as many as 10, major repairs. After so many major repairs, the bodies and tracks of these machine tools have worn out by 5-10 millimeters, and the quenching layers have been completely erased. Their performance has seriously deteriorated. In foreign countries, combination machine tools do not require any major repair, and their service life is only 8-10 years. The combination machine tools which has been in service for more than 15 years amounted to 50 percent in the Luoyang Tractor Plant and 70 percent in the No 1 Motor Vehicle Plant. They can no longer meet the requirements of precision processing. Of the 8,780 machine tools belonging to 13 backbone machine tool plants, 34.5 percent are of unstable quality and cannot meet precision requirements. In the three large-ball-bearing plants in Harbin, Wafangdian and Luoyang, more than 45 percent of the machine tools have been in service for more than 20 years. Those failing to match the required quality standards amount to 32 percent in Luoyang Ball-Bearing Plant and 60 percent in Harbin Ball-Bearing Plant.

Anshan Iron and Steel Company is a fairly typical example in metallurgical industry. It is doing fairly well in technical transformation and the main objective is to enlarge its productive capacity. Its designed productive capacity for steel was 3.2 million tons in the 1950's and is now increased to 6.8 million tons, more than doubled. The varieties of rolled steel have been increased and the consumption has been lowered. However, 67 percent of its equipment is of 1930-1950 vintage, and the varieties and quality of many steel products are unfit for the national economy. The semicontinuous roller, as the principal rolling machine for the production of hot-rolled curled plates in our country at present, belongs to the equipment and technology of the 1950's. The thickness of the plates produced is uneven; their external and internal strengths are not the same; and the quality is very poor. This is a very serious waste.

In the chemical industry, except for the petrochemical industry equipment imported in recent years, there has been little change in equipment and technology although the productive capacity of the plant, built in the 1950's, has been expanded. For example, in the chemical fertilizer plant affiliated with the Jilin Chemical Industry Company (this plant is one of 156 projects), the productive capacity for synthetic ammonia has been increased from 75,000 tons to 300,000 tons. However, because of its backward technology, the average energy consumption for each ton of synthetic ammonia has been all along between 17 million and 18 million kilocalories, while the 300,000-ton synthetic ammonia plant imported in the 1970's consumes only 9-10 million kilocalories of energy for the production of each ton of synthetic ammonia. The annual productive capacity of a dyestuff plant imported in the 1950's for dyestuffs and the intermediates has also been increased from some 30,000 to 50,000 tons, but the varieties are mostly of a low grade.

In light and textile industries, many items of equipment were in service before the founding of the People's Republic. For example, the cotton textile equipment has been in service before Liberation, and most of them have been used for 50-60 years. Though they have been remodeled, their technical performance is still very backward.

The technical equipment in communications and transportation is also very much outdated.

In view of the condition of some principal equipment still in service in our country, the neglect of technical transformation and of updating the products will have grave consequences.

There are now 2.83 million sets of machine tools in our country. Although 67.2 percent of them have been in service for less than 10 years, most of them (with the exception of a very small portion of imported machines) were produced during the 10 years of turmoil in a very sloppy way. The technology is backward, the quality is poor, and the efficiency is low. A portion of those which have been in service for more than 10 years were produced during the "Great Leap Forward," and are very poor in properties and quality. There are still approximately 590,000 old sets which have been in service for more than 20 years. According to the composition of the machine tools, the majority of them are ordinary machine tools for primary processing, planers and slotters. On the whole, approximately one-third of the machine tools in our country are relatively good, another one-third of them can still be used after being rebuilt, and the remaining one-third should be replaced in a planned way and discarded.

There are approximately 200,000 industrial boilers with 370,000 evaporation tons in our country. Those with poor performance and a thermal efficiency of less than 55 percent account for two-thirds of the total number or 36 percent of the total evaporation tonnage. Of these boilers, more than 60,000 sets (one-third of the total number) or 30,000 evaporation tons (16 percent of the total tonnage) are of the Lancashire, Cornish or cast-iron types with a thermal efficiency of only 40 percent.

We now have approximately 1.56 million civilian motor vehicles in the country. Of them, 60 percent are 4-ton Jiefang trucks and 2-ton Juejin trucks, of a standard equivalent to that of the 1940's in foreign countries. Their fuel consumption for every 100 ton-kilometer is higher than that of foreign vehicles by 21 percent and 30 percent respectively. The fuel consumption by other miscellaneous brands is even higher.

In the mid- and late-1960's, our country imported a number of new technologies which were up to the early 1960 level, but this number was not large. Taking advantage of the technology of the 1950's imported from the Soviet Union, we built a number of projects through imitation. In a small number of key and backbone projects, we absorbed and assimilated the Soviet technology of the 1950's and at the same time absorbed and transformed some advanced technology from other countries. We even improved the original technology to some extent. Some of them were basically up to the 1960 level. They were, for example, the equipment and technology of the Panzhihua Iron and Steel Company, the 2,500 cubic-meter blast furnace of the Wuhan Iron and Steel Company, the "five golden flowers" (atmospheric decompression, catalysis and cracking, delayed coking, platinum reforming and treating) and the manufacture of the "nine major items" in the machinery industry.

The fixed assets acquired in our country in the 1970's include a number of advanced equipment and technology imported from foreign countries, the main items being the large petrochemical equipment, the large rolling mills for thin plates, power station equipment and so forth. They all have the special features of large sizes, high efficiency, automatic control and a high degree of comprehensive heat utilization. We utilized these items to equip nearly 20 new enterprises and to expand or transform 60-70 old enterprises. The technology imported at that time was up to the international technological standards of the late 1960's or the early and mid-1970's. It was at the advanced or fairly advanced level. Among the plants built and equipped by ourselves in the 1970's, some were designed and started in the 1960's. Some of these enterprises were of fairly good quality. However, among the new projects undertaken in the 1970's, many had problems with the manufacture and installation of equipment because of the disruptions during the 10 years of turmoil. The technical equipment of some of the large, small and medium-size third-line construction projects were not bad at all. However, because of the lack of coordination in engineering, the irrational layout of the factory buildings and the lack of supportive measures in power, raw material and transportation, their productive capacity cannot be brought into play. According to statistics at the end of 1979, 37 percent of the total industrial fixed assets throughout the country were concentrated in the third-line areas, and their industrial output value amounted to only 36 percent of the national total. The level of technical equipment (that is, the average amount of fixed assets for each worker) of the large- and medium-size enterprises in the third-line areas is higher than those of the three municipalities and provinces (Beijing, Tianjin, Shanghai, Liaoning and Jiangsu) by 27 percent, but the output value per worker was 52 percent lower, and the fixed asset utilization coefficient (that is, the output value for every 100 yuan's fixed asset) was 54 percent lower. In addition, the technology of the large number of "five-small enterprises" formed in the 1970's is generally very backward.

From what has been pointed out, it can be roughly deduced that approximately 20 percent of the industrial technical equipment in our country are up to the 1960-1970 technical level, and are advanced or fairly advanced; and that approximately 20-25 percent is in basically good conditions and can generally meet the technical requirements for production in our country at present, because it is not yet too primitive, though technically backward. These two categories combine to form 40-45 percent of the whole amount. Of the remaining 55-60 percent, approximately 35 percent is quite obsolete and backward, and the products produced by them can hardly be up to the original level of technical precision. Their consumption of energy and raw materials is excessive and the waste is serious. It is now high time for them to be transformed or salvaged. There is still another 20-25 percent which has become obsolete. Its precision in processing is low, and consumption of energy and raw materials is quite high. It can no longer meet the technical requirements for the upgrading of our industrial goods, and can just get by in production now. This portion of equipment is also due for renovation and transformation.

#### Technical Transformation Based on Our National Conditions and Taking Our Own Road

Technical transformation must be based on our national conditions and take a road suitable for these conditions. Since the founding of the People's Republic, we have established an independent and fairly complete industrial system and national economic system. Our agriculture, industry, communications and transportation and commerce have undergone great developments, and our technological level has also been greatly raised since liberation. Compared with the economically developed countries, however, our country is still very backward. We have now a population of 1 billion including 800 million peasants, and our manpower and natural resources are plentiful. However, our manpower is not being fully utilized and the exploitation of our natural resources is far from adequate. Our economic development is slow and our business management, science and technology are still very backward. Under such conditions, we should adopt that type of advanced technology that is suitable for our national resources and our technical and management levels, and can bring forth good economic results, instead of indiscriminately insisting on having the most up-to-date technology and one-sidedly striving for whatever is new and foreign-made. We should formulate our technical equipment policy that is consistent with our national conditions and according to the actual conditions and the goal of our development. The advanced technology that is consistent with our actual conditions should include both the most up-to-date and the ordinary technology. It should help us improve the quality of our products, increase their designs and varieties, raise the output of easily marketable goods, conserve our energy and raw materials, provide more job opportunities and utilize our resources in an all-round way. In short, we must fully consider these requirements in the selection of our required technology.

The adoption of an advanced technology that suits our national conditions does not mean the total exclusion of the most up-to-date technology and keeping our technological level indefinitely below that of the economically

developed countries. For certain departments, certain products and certain fields of technology, we should, based on the need and the capability, adopt certain most up-to-date technology and use it as a means to raise the entire technological level.

Importing advanced technology and equipment from abroad must proceed from the actual needs for technical transformation in our country. We must be sure that only the type of technology that is suitable for our country's actual conditions, the key equipment, instruments and meters which we cannot produce ourselves, and a small amount of serial equipment for certain portions of the production process, are imported. We must endeavor to master, assimilate and develop the imported equipment, and minimize, or even refrain from the importing of whole sets of equipment. We will not import any equipment that we can manufacture ourselves, and must avoid any duplication in our importation. Some rules and regulations should be worked out for the assimilation and development of imported technology. We must adopt the policy of protecting our industrial development. In the 30 years from 1950 to 1979, 90 percent of the total amount of foreign exchange earmarked for importing technology was spent on whole sets of equipment, while only 1.4 percent was spent on importing advanced technology and the technology of manufacture. This situation must be changed. The importation of advanced technology and the technical transformation for enterprises must be well combined. In recent years, the methods of joint venture using Chinese and foreign investment, cooperative production, cooperative exploitation, compensatory trade, and processing and assembling for foreign customers have been used in Shanghai, Tianjin and other cities for importing certain advanced technology for transforming the small- and medium-size enterprises. These cities have had many successful experiences which should be highly regarded and popularized.

#### Improvement of Social Economic Results as the Goal of Technical Transformation

In carrying out technical transformation, we must set the improvement of economic results as the goal. We must firmly bear in mind the benefits of the entire national economy in addition to those of our own enterprise, our own trade or our own department. We must firmly oppose the methods used in the past--methods which involved huge expenditures and caused tremendous waste only for the sake of appearance and without producing any real results.

What should be attended to in accomplishing technical transformation? In his "Report on the Work of the Government" at the Fourth Session of the Fifth National People's Congress, Premier Zhao Ziyang pointed out the need to (1) economize on energy and raw and semifinished materials, reduce their consumption and lower production costs; (2) change the product mix, upgrade and update products, and improve their properties and quality, so as to meet the needs of markets at home and abroad; and (3) make rational use of resources and raise the level of comprehensive utilization. Furthermore, attention should be paid to safety in production, the improvement of environmental protection and the reduction of heavy manual labor.

Equipment renovation (including the renovation of production equipment, technical equipment and the means of measurement and testing) is an important



transformation for the industrially developed central cities and the backbone enterprises.

Planning for technical transformation should apply to various levels, and there should be national, regional and departmental plans as well as plans for different trades. Since technical transformation plans are an important component of the plans at the state and various other levels, they should be included in the national economic plans at the corresponding levels for a comprehensive balance to be worked out. Important technical transformation projects can be included in these plans only after their feasibility study.

There should be an overall plan which includes the important technical transformation projects involving the overall national economy, the projects for the infrastructure, the coordination of various tasks of technical transformation among the principal trades and key enterprises and the overall balance of funds, materials and the technical force.

There should be plans for different trades. These plans are based on the overall plan and the requirements of industrial reorganization. No technical transformation will be arranged for those enterprises whose orientation of production has not been determined and which has not had any production task and is ready to be closed, suspended, merged or retooled. In working out these plans, we should determine the orientation and focus of technical development for that trade so that it will help in the development of specialization and cooperation. All departments and trades should carefully attend to the technical transformation for the key enterprises. The relationship between production task and technical transformation should be well handled. Should there be any difficulty in some enterprises with technical transformation because of its heavy production task, part of the production task can be transferred to another enterprise in a well planned way. Technical transformation can be advanced for some enterprises who are now having insufficient production tasks, provided they have good prospects of development.

There should also be plans for different enterprises. Plans for technical transformation among the enterprises should be carried out on the basis of enterprise reorganization. The enterprises should select their own priority and key items for technical transformation on the basis of their own manpower and financial and material resources and in accordance with the requirements of the regional and trade plans. The broad masses of workers and staff members must be encouraged to discuss these plans before they are finalized to be approved by the departments in charge.

Technical transformation should begin in the central cities or the industrial bases with due consideration for the overall national economy. The central cities are economic centers formed in the course of historical development. The majority of industrial enterprises are concentrated in these cities, and there is a large number of old enterprises, especially in the coastal cities, in urgent need of technical transformation. Therefore, planning for technical transformation in the central cities is of great significance. Such planning should be carried out under the guidance of the overall plan and the trade plans so that the central and the local authorities

aspect of technical transformation at present. Since the equipment in many enterprises is seriously obsolete, equipment renovation is therefore a prominent problem in technical transformation at present. However, our work in this respect should be based on the need as well as our capability, in order to achieve real results. Under the present conditions, renovation should be carried out in the key enterprises along with the remodeling of the key parts of equipment which can yield better economic results. This does not apply to all enterprises and their equipment, nor does it mean an all-round renovation. Generally speaking, the equipment under the following conditions should be renovated in a planned way: (1) the equipment which has been seriously worn out, and whose properties and precision are no longer up to the required technological standard and may bring about serious technical and economic consequences; (2) the equipment for which replacement would be more economical than major repair; and (3) the equipment on which the value of energy wasted in 2 or 3 years would be more than what is required to purchase new equipment. Of course, the need for some equipment to be replaced is not only based on the degree of its primitiveness or on the period of its service, but also on its economic results. For a serious technical and economic assessment, equipment renovation does not mean a replacement of the same type but rather the substitution of the most advanced for the backward equipment. Old equipment of these three categories should be replaced by advanced equipment in a planned way. For example, if the old water pumps being used in oil-fields and coal mines are replaced by the new and highly efficient water pumps, the savings from reduced electric consumption by each pump in 1 year will be sufficient for buying two new pumps. Again, if the old windmills in the coal mines are replaced by new and highly efficient ones, their operating efficiency will be raised by 10 percent, and the money spent on the replacement can be completely recovered in 1 year. Furthermore, the use of new and highly efficient windmills in small chemical fertilizer factories can raise their operating efficiency by 20 percent, and the savings from electric consumption will be sufficient to offset the investment in 2 or 3 months. These matters should be actively attended to.

Improvement of technology is an important means to improve economic results. Backward technology is an important cause of inferior quality and performance, high consumption and poor economic results. In accordance with their own specific situation and capability, all enterprises must proceed from the need to guarantee the production of fine-quality products, the lowering of consumption of energy and raw materials, and safety in production, and then, after study, experiments and confirmations, adopt new technical methods and procedures to manufacture low-price and attractive products, especially new products.

The development of new varieties will not only meet the people's ever-growing needs in their material and cultural lives, but also help achieve great economic results. Therefore, we must give full play to the important role of science and technology, step up our work in the study, design and trial manufacture of new products, and use the new products which are of fine quality, good performance and long service life and require low consumption, to replace in good time the old products which are of inferior quality, poor performance and short service life and require high consumption. If the service

life of our ball-bearings and lightbulbs is only one-third or one-fifth and one-tenth of that of foreign products, then these old products should be discarded in a planned way. We should arrange for three generations of each type of product: the generation being produced, the generation under research and the generation ready to be developed. In developing new products, we must substitute new technology for backward technology and organize the application of the results of scientific and technological research in laboratories to production, the application of those gained in the national defense industry to production for both defense and civilian purposes, and the application of those gained in the coastal areas to production in the hinterland, as well as the assimilation of foreign experiences for use in China.

In carrying out technical transformation, some factory buildings and public facilities should also be repaired or transformed. This problem exists in many old industrial bases. We must take the necessary measures to strengthen or overhaul the dangerous factory buildings and carry out partial transformation of these buildings in accordance with the required technology, equipment and stress under the load, and readjust the technical layout in accordance with the technological process. However, it would be uneconomical and undesirable to go in for new capital construction projects in the name of technical transformation.

#### Technical Transformation To Be Carried Out Selectively and Systematically Under Overall Planning

Many problems have piled up in technical transformation and it would be unrealistic for us to lay them all out for solution. Technical transformation should be well planned and carried out selectively and systematically in combination with economic readjustment, industrial restructuring and enterprise reorganization. We must guard against the tendency of rushing into action blindly without investigations and study and regardless of economic results. The technical transformation of existing enterprises should be considered along with the building of new enterprises; and both should be included in state plans.

Emphasis in technical transformation should be laid on its advantage to economic readjustment, to the solution of the most urgent problems in the national economy, to the tapping of potential of enterprises to the full extent and to the technical transformation of the entire national economy. Therefore, we should give priority to those projects which have their influence on the national income and the people's livelihood, are capable of being accomplished, require less investment, yield quick returns, and will produce optimal economic results. Great importance should be attached to the renovation and transformation of the technical equipment for conserving energy and exploiting energy resources, the technical equipment for the light and textile industries and the technical equipment for communications and transportation and posts and telecommunication. Technical transformation for the machinery industry and the related metal material industry should be a little earlier in order that advanced technical equipment can be supplied in good time to the other sectors of the national economy. In accordance with the specific conditions in our country, we should concentrate our resources on the technical

can be combined. In arranging the projects of the key trades and enterprises for important transformation, we should combine technical transformation with the transformation and development of the cities. The leading organs of the central cities and all trades and undertakings should select and personally attend to several key enterprises and key projects, carefully plan the technical transformation and work out measures for carrying out the plans and for gaining the experiences.

#### The Need for Specific Measures in Technical Transformation

(1) Raising funds for technical transformation. In the past, our investments in fixed assets were mainly used on new construction projects. Some changes have taken place in the past several years. In 1981, for example, 40 percent of the state's total investment in fixed assets was spent on renovation and transformation. This percentage has been markedly raised, and will be even higher this year than last year. In the future, the portion of fixed asset investment to be used on the technical transformation for the existing enterprises will be gradually increased. However, since the state's capital construction funds are limited, and the importation of complete sets of equipment now under construction has to be assured, it would be very difficult to raise this percentage too much at one time. Therefore, for technical transformation, we must make full use of the funds owned by the enterprises, localities and departments, including the depreciation fund, the major repair funds, the funds from the retained profits of enterprises for developing their production, and their bank loans. At present, the depreciation funds and major repair funds of all the industrial enterprises throughout the country amount to approximately 200 billion yuan, while the production funds and welfare funds retained by the enterprises amount to approximately 30 billion yuan each year. The grand total of all these funds is approximately 50 billion yuan, which is outside the budget. How to use these funds rationally is an important question. If one half of them can be used in technical transformation, we will be able to accomplish a great deal.

We should guide and help the enterprises to keep and use their own funds well. All funds earmarked for technical transformation should not be diverted to other uses. At present, the major portion of the funds appropriated by the industrial and transportation enterprises for renovation, transformation and production development are being used in building new factories or increasing their new equipment, while only a very minor portion is used for the renovation of equipment and technical transformation. We must use policies to encourage and administrative interventions to guide them so that more funds can be used in equipment renovation and technical transformation. We should give full play to the role of bank loans and rational interest rates in raising funds for technical transformation. Even financial allocations should be carried out through banks in the form of loans. Foreign funds and foreign exchange should also be utilized to promote technical transformation.

To promote technical transformation for the existing enterprises, we can choose some products, such as the new energy-saving boilers, new motor vehicles and so forth, for experimentation with the "chain" method so that the funds for research, design trial manufacture and production and the funds of

the using units from either financial allocation or bank loans for purchasing the equipment can be pooled and placed at the disposal of the production departments or the relevant units. This unified arrangement will insure that the new products of the production units can be promptly sold while the units using the equipment can carry out their renovation in time.

(2) Proper handling of depreciation funds. There are two different views on the current rates of depreciation. One of them is that the depreciation rates are too low and disadvantageous to technical transformation. Another view is that from the standpoint of an enterprise, the proportion of depreciation fund appropriation is incommensurate with the task of technical transformation, since the same depreciation rate may be high for newly constructed enterprises whose task of technical transformation is light, and low for the old enterprises whose technical transformation task is heavy. Therefore, the problem of unbalanced use of depreciation funds cannot be solved by raising the depreciation rate; on the contrary, this can only reduce state income and decentralize the funds. It would thus be better not to raise the depreciation rate for the time being in order that the funds can be centralized in the hands of the state. The enterprises with heavy technical transformation tasks and not having enough funds of their own should be subsidized by the state.

There are also two different views on the control of depreciation funds. One of them is that the present method--whereby the state collects 30 percent, the locality collects 20 percent and the enterprise retains 50 percent--should remain unchanged; and the other view is that the shares of the state and the locality should be reduced or that the entire amount should be retained by the enterprise.

In consideration of the disadvantage to equipment renovation and technical transformation on account of unduly low depreciation rates, we should create the conditions for the rates to be raised. As a matter of orientation, depreciation funds should in principle be entirely at the disposal of the enterprises. However, in view of our present financial difficulties, large-scale increase in depreciation rate is impossible. On the other hand, collection of part of the depreciation funds in a planned way by the state can help in the technical transformation for the key enterprises, in a reasonable apportionment of funds among different localities, trades and enterprises, and particularly in planning for certain important technical transformation projects which require heavy investments and long construction periods in those localities and enterprises where initiative is lacking and where the undertaking of these projects is essential to the overall situation nevertheless. For this reason, there should be no drastic change in the control of depreciation funds at present. For those trades or enterprises which have real difficulty in maintaining even simple reproduction, the rates of depreciation or the proportion to be retained may be adjusted individually. Through investigations and study, we should work out realistic depreciation rates based on the special characteristics of the departments and trades, and these rates should be approved by the State Council before being enforced.

(3) Funds for subsidizing the trial manufacture of new products. Through technical transformation, the enterprises should systematically manufacture

new products in order that their products can be continually updated. To develop new products, we must guarantee regular sources of funds. The funds for subsidizing the trial manufacture of ordinary new products can be included in the production costs of old products. Only thus can fine-quality goods be sold at reasonable prices. Trial manufacture of new products must be subjected to technical and economic confirmation, and the seasoned technology with definitely better results should be chosen for this purpose. The departments concerned should work out concrete regulations to guarantee the sources of funds for the trial manufacture of new products and to prevent rash action in trial manufacture.

(4) Training the technical force. The task of technical transformation can hardly be carried out without a technical force which is expert and red. We must step up the training of workers and staff members through diverse and flexible forms of schooling so as to increase the technical knowledge and work skill of all types of personnel. The professional technicians should stay in their own professions even though they may change their jobs. At the same time, the vocational skill of the managerial personnel at all levels should be enhanced to meet the requirements of technical transformation.

(5) Broad masses encouraged to offer rational proposals. All industrial and transportation enterprises should highly regard our past experiences, which have been proved to be effective, in encouraging the workers and staff members to discuss the plans for technical transformation, and to offer their rational proposals. We should carefully receive, examine, accept and implement the rational proposals and attend to the minor changes which do not involve heavy expenditures but yield marked results. The method of three-in-one combination of leading cadres, technicians and workers should be adopted to solve various important problems in the course of technical transformation.

(6) Keeping accounts of technical transformation in planning at all levels. As part of the investment in fixed assets, the funds for technical transformation should be accounted for in the plans at all levels. All the required equipment and materials should be separately included in the plans at various levels for the distribution of materials. The supply must be insured, and there must not be any empty promise.

(7) Methods for the disposal of discarded equipment. The present method of transferring discarded equipment to the lower levels is not conducive either to the conservation of energy or to the rise of production technology. A set of regulations should be worked out from the standpoint of economic results for the renovation, remodeling, transfer or withdrawal of equipment from service. Transferring equipment to the lower levels can be carried out only when it serves to improve social economic results, but not otherwise. Rational prices for discarded steel and regulations concerning the responsibility for transportation expenses should be worked out so as to encourage the use of scrap metal for smelting.

Technical transformation is an important issue with its bearing on all sectors of the national economy and all enterprises. We must provide more active leadership, carry out serious investigations and study, continue to discover

new developments and to solve new problems, sum up our new experiences, and keep up the steady progress of technical transformation, so that we can systematically shift our national economy on to a new material and technical foundation to greet the arrival of the new period of vigorous economic development in our country.

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## FIRMLY AND RELIABLY CARRY OUT RESTRUCTURING OF THE ECONOMIC SYSTEM

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[Text] Guided by the line of seeking truth from facts and thought liberation put forth by the 3d Plenary Session of the 11th Party Central Committee and the principles of "readjustment, restructuring, reorganization, and upgrading," regions and departments have conducted preliminary restructuring of the economic system. Now we must make a correct analysis of the achievements and problems in the preliminary restructuring of the past 3 years, further clarify the goals and directions of future restructuring the system and propose some viewpoints on questions which should be considered in current restructuring work.

### Accomplishments and Problems of Restructuring

Restructuring of China's economic system began under rather difficult conditions. When restructuring began, the national economy had not yet recovered from the decade of chaos, important proportional relationships were seriously dislocated, and the necessary reserves of finances and materiel were lacking; normal procedures had not yet been set up on the various fronts and the level of economic management was very low; people lacked the proper ideological preparation for restructuring the system and understanding was very inconsistent. Beginning restructuring of the economic system under these conditions was an extraordinarily difficult task. For 3 years now, system restructuring has gradually expanded to all economic areas from implementing systems of production responsibility in the rural areas and beginning pilot projects in expanded enterprise rights in the cities. Although this restructuring has just begun, it has already vigorously promoted readjustment of the national economy and development of social productive forces and has produced an important and far-reaching influence on our national economic and political life.

1. Encouraging and supporting the collective sector, the joint sector and to a certain degree the individual sector, permitting a variety of economic elements and economic forms to coexist and develop has promoted the invigoration and prospering of the urban and rural economy. In the rural areas, generally establishing various kinds of systems of production responsibility, such as



linking compensation to production and contracts for specialized jobs, expanded as appropriate private plots for commune members, encouraging household sideline production and at the same time greatly increasing the purchasing price of agricultural products, such measures have effectively mobilized the initiative of the peasants and agricultural production has been restored and developed rapidly. In the cities, a large group of collectively-owned industries, transport firms, retail outlets, and food and services firms, and individually-owned industries and small merchants have appeared, which has invigorated the market, expanded employment and also made the lives of the masses more convenient.

2. Managerial and administrative autonomy of state-run industrial and commercial firms has been expanded, and various types of systems of economic responsibility have been carried out which has begun to create socialist economic units which have unified responsibilities, rights, and interests and are relatively independent. Through expansion of rights, test firms have had rights in the areas of planning arrangements, commodity buying and selling, profit distribution, capital fund use and the like, employee economic interests have been linked in a preliminary way with the results of firm management, which has stimulated their initiative to expand production, improve management and increase abundant profits. In the first half of 1981, in many areas an economic responsibility system which was mainly a profit contract system was put into effect with clear results in those firms which had good management and strong political and ideological work.

3. While upholding planned economy, they began to pay attention to developing the supplementary role of market regulation. In industrial means of production, they broke the bonds of traditional ideas and began to use them as goods in the market, permitting some firms to sell some of their own goods themselves within the scope of state stipulations. The single method of state monopoly of purchase and exclusive sales rights of industrial consumer goods was also changed and a variety of sales and purchasing forms, such as state marketing and purchase, planned purchase, ordering goods, picking out purchases, and enterprises selling their own goods and the like were introduced. Through restructuring in the commercial system, circulation channels were increased and circulation links were reduced. This played a very good role in bringing production and needs closer together, expanding commodity exchange, and promoting the development of industrial and agricultural production.

4. Pilot financial system restructuring and compensated use of capital has, to a certain degree, smashed the situation of unified income and expenditure and benefited upgrading the effectiveness of using capital. In central and local financial administration, implementing such methods as "separating receipts and disbursements," "assigning contracts by level," "quota allowances," "quota pass on," and "quane fencheng" [0356 7326 0433 2052] raised local initiative to increase income while economizing on expenditures. With regard to capital investment and uncovering funds for restructuring, tests have been carried out to change appropriations into loans and changing liquid assets from uncompensated funds into fully compensated funds. This has strengthened economic responsibility of firms, reduced waste through reckless competing projects, competing investment and ignoring effectiveness of use.

5. Linking up with reorganizing the national economy, they began with reorganizing and combining enterprises in accordance with economically inherent relationships and this created favorable conditions for improving economic benefits and for gradually moving towards a situation where economic organizations manage the economy. Specialized companies, general plants, and co-operative technology centers numbering in the thousands have already been reorganized and established and the combined industrial enterprises participating number in the tens of thousands nationally. Some areas have also instituted various types of economic integration, such as combined management, joint management, and compensatory trade between firms, regions, and city and countryside, which has helped change this irrational situation of "big and complete," "small and complete," and excessive decentralization of firms in China, accelerated reorganization of enterprise organizational structure and product structure, and greatly improved the overall productive capacity of enterprises.

6. To strengthen leadership of economic and other kinds of work, they began carrying out a major restructuring of governmental agencies to suit the needs of modernization. This year the Fifth People's Congress Standing Committee approved a resolution on the question of restructuring the organs of the State Council. The important provisions of this restructuring of the State Council are: replenish and strengthen the overall managerial departments; eliminate overlapping administrative organs and combine organs which are close in function; clarify the range of responsibility of each organ; provide and establish good leadership teams and reduce and rotate cadres. This will produce very great changes in the present situation where organs are overstaffed, have overlapping administrative levels, the range of responsibilities is not clear, leadership is aging, and work efficiency is very low. It is both an important part of restructuring the entire system and a precondition for further restructuring of the economic system.

The partial and exploratory restructuring, in terms of production, allocation, circulation, consumption, and ownership we began to break through the old system which was overcentralized, discriminated against market mechanisms, relied mainly on administrative organs and methods to manage the economy and effectively mobilized initiative in all areas so that the entire economy became invigorated. Because of implementing the series of party principles and policies and carrying out the above-mentioned reforms, in the period of readjustment, the national economy could maintain a certain rate of growth, and there was a larger increase in social wealth; there was a big improvement in the imbalance in important proportion of agriculture, light industry, and heavy industry and consumption and accumulation, and thousands of workers found employment, there was an evident improvement in the people's standard of living in city and country and this is very favorable for consolidation and growth of a situation of stability and unity. It can be affirmed that if there was not comprehensive implementation of the "eight character policy" and there was talk only of readjustment and not restructuring, then making such enormous progress in such a short time would have been impossible.

Of course, since restructuring the economic system is itself a brand new and extremely difficult mission, and we also lack experience, certain problems

appeared unavoidably in restructuring work. These problems are mainly:

- 1) While invigorating the economy, there was no comparably strengthened, centralized management, so there was a development of tendencies towards selfish departmentalism, decentralism, and liberalization in the economic realm.
- 2) Between some restructuring measures which had already been implemented there was no connection and no coordination which had an impact on the overall results of the restructuring.
- 3) Some restructuring was not closely enough combined with readjustment of the national economy and readjustments of enterprises, so the pace was slowed slightly.
- 4) Organs responsible for planning, directing, and coordinating restructuring of the system were weak and lacked an authoritative comprehensive plan for restructuring the economy and concrete programs for specific measures. It was difficult to avoid creating these problems in the process of moving ahead, they are relative to the achievements and directions of restructuring the system and unquestionably are nonessential and nonmainstream things. If we maintain clear heads, are good at summarizing the lessons of experience, and constantly improve work, these problems can be resolved. If, because of these problems, we underestimate or deny the role of restructuring the system in promoting the turning around of the national economy or even doubt the general direction of restructuring the system, then that is not correct.

#### Goals and Direction of Restructuring

The Resolution on Certain Questions in the History of the Party Since the Founding of the PRC of the 6th Plenary Session of the 11th Party Central Committee clearly stated: "The development of socialist productive relations does not exist in a single model. Our task is, in accordance with the demands of development of our productive forces, to create specific forms of productive relations which are suited to each stage and facilitate continuing advance." This is the fundamental principle which should be obeyed in restructuring our economic system. Our socialist economic system was built on semifeudal and semicolonial ruins, thus the level of development of productive forces and the degree of socialization of production is very low, and the production of goods and the exchange of goods is still very underdeveloped. However, for a long time now, due to "leftist" ideological influence, some aspects of our productive relations have gone beyond the development of China's productive relations and hastened towards development of a single ownership system of "large in size and collective in nature." Changing this unsuitable situation, on the one hand will require vigorous development of commodity production and exchange, and rapid improvement of society's productive forces and the degree of socialization of production; and on the other hand will require restructuring the present productive relations to suit the level of development of productive forces. The practice of the past 30 years proves that at the present stage China's socialist economy is founded on ownership by the public and must carry out a planned economy but at the same time economic planning must reflect the law of value, because there is still commodity production and exchange. Based on this economic condition which exists objectively, the goals and direction of restructuring China's economic system in sum is to build an economic system in which socialist ownership has absolute superiority, diversified economic elements coexist, and which is based primarily on planned economy with market regulation as a supplement. Specifically, restructuring should cover the following six areas:

1) Adapting to the situation of developing multiple administrative levels of China's productive forces, an ownership structure should be established in which there coexist a variety of economic elements with socialist public ownership being primary and other economic elements being supplementary.

In terms of ownership, in the past we got rid of the individual economy, and imposed the collective economy, moving towards the state-run economy, hoping to form a publicly owned economy as quickly as possible. Practice has shown that this way was isolated from the actuality of multiple administrative levels in the development of China's productive forces and was unfavorable for mobilizing the initiative of the workers. In the future, we should adopt different forms of ownership, depending on the different sizes of firms and the role they play in the national economy.

That is, those important economic sections which have a high degree of socialized production and are crucial to the national economy, such as railways, shipping, banking, posts and telegraph, and some large-scale mainstay firms, must continue to implement state ownership and management and its leading position in the national economy.

In accordance with the principles of willingness and mutual benefit, in rural areas which have a low level of development of productive forces, except for a very small number of state farms and livestock farms, collective economies of different forms and new economically combined organizations should be developed. In cities, collectively owned enterprises and undertakings of different forms should also be vigorously developed. This large collective sector is a supplementary strength to the state sector. The state sector and the collective sector together form the main body of our economy.

Apart from those which are collective-operated, urban retail, catering, and handicrafts firms and other repair and service firms can still be operated by individuals. These individual operations and rural private plots and domestic sideline production enterprises are a necessary supplement to the publicly owned sector.

In addition to the three basic economic elements of state, collective and individual, Chinese-foreign jointly capitalized ventures and joint ventures of other types should be developed.

2) In accordance with different degrees of socialization of production and in line with national decision-making, an economic decision-making system of multiple administrative levels which integrates centralized, local, and economic units and the individual worker should be established.

Which decision-making should be centralized and which should be decentralized depends on the nature of the object of the decision. All strategic problems which concern the national economy as a whole, such as the direction of national economic development, major proportional relationships, national revenue and allocation and use, overall scale of capital construction and major investment, improving the standard of living of the people and the like, must be arrogated to the state and decided centrally; they absolutely

cannot permit decentralized decision-making. To insure the normal development of economic construction, the scope of centralized decision-making should also include a small amount of large-scale mainstay enterprise production and sales activity and the allocation and supply of important resources which are in short supply. This is an objective demand of a planned economy.

Accepting national decision-making, local areas and firms should also have the right to make their own decisions. That is, within a certain scope they can arrange on their own such day-to-day economic activity as production, marketing, use of capital, and deployment of manpower. The individual worker also enjoys a certain right of autonomy in participating in the democratic management of the firm, choosing a profession, and in buying goods.

Since each level has the right to make decisions, there should be established an economic responsibility system to delegate responsibility by level and truly unify rights, responsibilities and interests. This decision-making system by level which is linked up with the economic responsibility system is indispensable for guaranteeing prompt and correct decision-making, improving the efficiency of management, and fully developing the spirit of initiative of local areas, economic units, and individuals.

3) Suiting the demands of a planned economy and the development of commodity production, establish an economic regulatory system which unifies under the direction of a unified plan flexibly employs such regulatory methods as economic levers, economic laws and regulations, and economic supervision.

China is a socialist country and carries out a planned economy, so all important economic activity should be part of the national unified plan. Thus, the planning itself must be scientific and conform to actuality. This demands the establishment of a national economic information network, the formulation of legal procedures for drawing up plans, strengthening work on plan proofs, and carrying out a systematic restructuring of the existing planning management system.

Due to the existence of many types of economic elements and the relationship of goods and money, while carrying out plan regulation, it is also necessary to comprehensively consider and employ other economic regulatory methods, mainly economic levers such as price, taxes, and credit. These economic levers are very closely related to the interests of the state, the collective and the individual, and if applied properly, can sensitively and effectively play a regulatory role in the economy and thus be more beneficial to the smooth implementation of the state plan. For example, readjusting prices. Not only can they play an encouraging or restricting role with regard to production and consumption in accordance with the direction in which the state plan is leading, but they can also regulate the rate of profit of commodities, and promote the readjustment of property structure, commodity structure and firm organization structure. At present, for a variety of reasons, it is difficult to fully develop the role of the economic levers. Resolving this problem awaits comprehensive restructuring of the planning system, price systems, tax system, finance system, and banking system. Other techniques

such as economic laws and regulations and economic supervision, are also effective regulatory methods which can guarantee the realization of the state plan. In summary, under socialist conditions, regulatory methods are diverse, but it is necessary for regulation of planning to be the primary and other regulatory methods to revolve around planning. Moreover, only if planning is closely coordinated by other economic methods can it be better realized.

4) In accordance with the principle of the unity of responsibilities, rights and interests, various types of economic responsibility systems should be universally established to change the distribution systems of egalitarianism and "everyone eats from the same pot."

"Everyone eating from the same pot" and egalitarianism deny the role of material interests and violates the socialist principle of to each according to his labor and thus ties the hands of enterprises and the initiative and creativity of the workers and this is one very important reason why technological advancement is slow, administration and management is backward, production efficiency is low, and economic benefits are deficient. The fundamental way to eliminate this defect is to establish economic responsibility systems at each level and combine economic responsibility, economic authority, and economic interests from top to bottom so that each economic management department, economic unit, and individual can fully develop the spirit of initiative, each bear his own responsibility, each carry out his own tasks, and do their work with a sense that they are their own masters.

We should continue to strengthen and develop the production responsibility systems which have already been established in the rural areas. With the precondition that the state plan be completed and the interests of the nation be maintained, all industrial, business, and financial enterprises should strictly carry out a profit and loss responsibility system of independent accounting and be responsible for their own profits and losses, to directly link together the enterprise and the economic interests of the employees with the results of enterprise management and the labor put forth by the employees, and really carry out more work more pay, less work less pay, no work no pay. Losses due to poor management should be an economic responsibility borne by the enterprise and the income of the enterprise leaders should be suitably reduced.

At the same time, we should continue to expand experiments in capital construction and in uncovering, transforming, and changing capital from financial appropriations into bank loans so that gradually, all units which have business income and the ability to repay loans will get all necessary capital from bank loans and will repay principal and interest on time. Fixed assets owned by state-run enterprises should also pay expenses and taxes according to regulations and a fixed assets secured use system should be implemented.

5) Commodity production and exchange should be vigorously expanded and a commodity circulation market which is unified, unrestricted, rationally distributed, multichanneled and has few links be established.

Means of production and means of subsistence both should have their circulation organized according to the principles of socialist commodity exchange.

Apart from a few goods which are in short supply and important goods which have to do with the national economy and the peoples livelihood which should continue to be handled through state monopoly of purchase and marketing and planned purchase and marketing, most other goods can be freely bought and sold.

The boundaries between administrative divisions and administrative departments should be smashed and circulation be organized rationally according to economic regions, overlapping wholesale links be reduced, and the time it takes goods to go from the production area to the consumer area be reduced as much as possible. Circulation channels should also be increased and in addition to a large-volume increase in the state commercial retail outlet network, collective commerce and individual small-scale traders should be expanded and urban agricultural trade markets and rural country fair trade should be done well. While strengthening market management, beneficial competition should be protected, and areas must not create barriers and obstruct the entry of outside goods of high quality and low price so that goods can flow freely.

The foreign trade system should also be restructured so that it maintains unified policy, unified planning, unified management, and unified approach abroad and also gives appropriate autonomy to production enterprises and trading enterprises so that they can become entities to manage foreign trade to meet the demands of the ever-changing international market.

6) In accordance with the principles of specialized cooperation and economic reason, establish economic alliance entities of a variety of forms and fully develop the role of the central cities' organization and economic leadership and through the interweaving of the central cities' economic activity gradually form an economic network which is nationally unified, joins city and countryside, is in harmony and flexible.

In the existing system there are firmly entrenched departmental divisions and regional blockades and it is impossible to rationally organize social production and circulation in accordance with the demands of the natural alliances of the economy and major socialized production which severely influences development of productive forces and upgrading economic results. Restructuring this kind of system and carrying out rationalization of enterprise organization and economic organization is imperative. In combination with national economic readjustment, centering on the large- and medium-sized cities enterprises which are decentralized and "big and complete," "small and complete" should be organized into economic alliances of various forms. Some of the alliances will be regional, some will be cross regional and some must of necessity be national. All economic alliances should implement enterprise management internally and cannot engage in monopoly externally. To avoid enterprise monopoly, an industry should form an alliance to benefit the development of competition.

Smashing the administrative divisions of departments and regions, through economic organizations managing the economy demands that the role of the central cities be developed. Using the large- and medium-sized cities as a base, industrial centers, trade centers and their appropriate economic organizations

of finance, information, forecasting, and consultation should be established forming unique economic centers. These urban centers will have close associations with the surrounding small cities and towns and with the broad rural areas. A wide variety of economic cooperative ventures should be developed on the foundation of mutual help and benefit to play a role in leading and organizing the economy. Each economic center also will have intersecting connections with the other economic centers and gradually form an unrestricted economic network of city-countryside mutual help and benefit, organize combination of departments and regions, a rational division of labor between party and state and enterprise, and coordinated development of the economy, culture, science and technology, and social service which is national in scope. Under national unified planning, organizing economic activity through this unique economic network of different economic levels will upgrade its effectiveness and results much more than economic management by "central" and "local" authorities has heretofore, and will bring about the comprehensive prosperity of the urban and rural economy.

The new economic system built in accordance with the above principles, generally speaking will have the publicly owned economy as the main body and other economic elements as supplements; major authority will be centralized, minor authority will be decentralized; it will be a socialist new type of economic system in which planned economy is primary and market regulation is secondary, in which there is rational division of labor between party, government, and enterprise and in which economic and administrative methods are closely coordinated. This system conforms to China's specific national circumstances, being beneficial both for mobilizing initiative in many areas and for promoting the coordinated development of the national economy and the comprehensive upgrading of economic results.

#### Several Problems Which Should Be Resolved in Current Restructuring

In line with the general direction and goals of system restructuring, focusing on the problems that have emerged in preliminary restructuring over the past 3 years particular attention should now be given to doing the following tasks:

First of all, while continuing to invigorate the economy, the necessary centralized unity should be stressed and decisive and forceful measures should be adopted to strengthen planning management of the national economy.

In a socialist planned economy, "management" and "invigoration," centralization and decentralization are dialectical unities. Thus it is necessary to continue to maintain the principle of invigorating the micro-economy but we must also analyze this so that we can say generally what in the present economy is already too invigorated. In fact, many places which should be invigorated are still not "invigorated" enough. However, what we mean by "invigoration" is "invigoration" under unified planning management, and within the scope permitted by the macro-economy, this kind of "invigoration" must conform to the demands of the macro-economy; otherwise, "invigoration" might become "chaos." On the other hand, only when the necessary control is exercised in the macro-economy and the leadership and coordination of the unified planning is strengthened can conditions favorable to micro-economic development



be created so that the micro-economies' activity can really be "invigorated." As long as we observe carefully, in any macro-economic activity we can see its inseparable unity with the macro-economic activity. For example, in opening up the commodity markets in city and countryside it was necessary to issue relevant laws and regulations and strengthen market management before the normal progress of commercial activity could be guaranteed; if we had washed our hands of the matter and let anyone be "invigorated" at will, then there would have been speculation and manipulation, driving up prices and other such disorderly phenomena which are unfavorable for production and the people's standard of living.

From this it is clear that strengthening planning management is not only necessary for the macro-economy, but also is unusually necessary for guiding micro-economic activity as well. In the light of the present situation it is especially necessary to strengthen the strictness of planning and insure that state planning which has the force of an edict is thoroughly carried out. For example, in the rural areas the unauthorized reduction of grain field area and the reckless expansion of planting such cash crops as tobacco and rapeseed cannot be permitted; lowering the contracted purchase and selling price base of agricultural sideline products at will and expanding the ratio of negotiated prices and raising prices cannot be permitted. In the cities, the practice of not acting in accordance with the demands of the state plan, willfully lengthening the capital construction front and tendencies towards one-sidedly pursuing profits should be resolutely checked; recklessly monopolizing expenses and squeezing costs, giving too many bonuses, evading and cheating on taxes, skimming profits transferred to the state, inflating prices in disguise and other such activity cannot be permitted; backward enterprises whose goods have no markets, have high costs, and are low in quality and which compete with major industry for raw materials should be closed, suspended, merged or converted in a planned and decisive way. Foreign trade must uphold uniformity towards foreign countries and combine with foreign countries and stop the mistaken practices of too much multiplicity towards foreign countries, cutthroat price-cutting, and undermining our position. Pricing and revenue management should emphasize centralized uniformity even more and definitely not permit each firm to go its own way. This will definitely not overmanage the microeconomies again and not only will not interfere overmuch in all microeconomic activity beneficial to the national economy and the people's livelihood but will support it and encourage it. In summary, we should both oppose excessive uniformity and rigid management as well as oppose anarchistic attitudes in economic construction but seek to "control without being rigid and be flexible without being chaotic."

Secondly, economic system restructuring work should be treated in a comprehensive and systematic fashion and some time devoted to the articulation and coordination of restructuring measures.

The economic management system is a unified entity which took shape under certain political and economic conditions and there is a direct or indirect relationship between each of its parts so that if one part is touched it affects the entire structure. Carrying out system restructuring requires accurate mastery of these internal relationships so that restructuring measures

are dovetailed and coordinated in order to secure good results. If this kind of systematic thinking is lacking, changing this today, changing that tomorrow, adopting a piecemeal approach, stressing one point without considering others, even to the point of mutual contradiction, the inherent order of the original system will be disrupted before the new system has taken shape so that it will be hard to operate and the management of the entire national economy might be obstructed bringing disorder to social reproduction.

Thus, we should not only pay attention to dovetailing and coordinating between micro-economic restructuring measures, but especially to dovetailing and coordinating between micro-restructuring measures and macro-restructuring measures. Carrying out a restructuring item independently in the micro area without considering synchronous restructuring of associated linkages can frequently lead to contrary results. For example, if the profit contract system of economic responsibility engaged in by an enterprise is not accompanied by strengthening of enterprise planning management, quality control, quota control, financial management, and such, the enterprise might pursue profits through improper means. Even micro-restructuring must be dovetailed and coordinated with macro-restructuring, this goes without saying. This is because if the necessary restructuring is not done in the macro area, the micro-economic restructuring either fundamentally will not work or will create chaos. For example, since it is impossible for the time being to make major restructuring changes in the price system, restructuring in many micro-economies should not move at too great a pace. And if breaches are made willfully in prices this may lead to confusion in the economy.

The most important thing in dovetailing and coordinating system restructuring is to have an overall restructuring plan, and in this overall plan there should be both long range restructuring goals as well as concrete steps for realizing the goals by stages and there should also be an overall time schedule. In this way, our restructuring work can have clear goals and keep in step so that each restructuring item will conform to the general direction of the system restructuring and achieve the anticipated results.

Thirdly, economic system restructuring should be considered in combination with readjustment of the national economy, overall restructuring of enterprises and restructuring of administrative organs at all levels and the pace should be coordinated.

Economic system restructuring is a major undertaking which affects the overall situation and its smooth progress requires the provision of some indispensable conditions. The three main ones are: first, the important proportional relationships of the national economy should be fairly well coordinated, mainly that the supply of means of production and means of consumption and national financial strength cannot be drawn too tight, in this way it is possible to take into consideration and readjust the economic interests of various areas to facilitate the smooth progress of restructuring. This is a problem which national economic readjustment must resolve. Second, enterprise leadership teams should be strong, foundation work should be very solid, and production order should be very normal. This must be realized through comprehensive readjustment of the enterprise. Third, administrative and managerial

organs at all levels must be unified, simplified, have high work efficiency, and at the same time have a leadership team made up of cadres who have both ability and political integrity, are in the prime of life, and are loyal to restructuring. This also awaits the thorough restructuring of existing administrative organs. From this it can be seen that whether economic system restructuring proceeds quickly or slowly to a considerable degree depends on the progress of national economic readjustment, comprehensive readjustment of enterprises, and restructuring of administrative organs. Proceeding with restructuring independently without giving comprehensive consideration to these conditions not only will make it hard to do, but might also create many abuses. At present, these three tasks are being solidly carried out and the conditions for economic system restructuring are getting better and better. We can completely affirm that under the resolute leadership of the party Central Committee and the State Council, and through the collective effort of all cadres and the broad masses of the people, this enormous and complex historical mission of economic system restructuring which concerns the overall situation of the national economy will certainly be completed victoriously.

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UPHOLD THE POLICY OF RESTRUCTURING, CONSCIENTIOUSLY SUMMARIZE EXPERIENCE, CONSTANTLY DEVELOP AND IMPROVE THE ECONOMIC RESPONSIBILITY SYSTEM IN INDUSTRIAL PRODUCTION

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[Text] After the 3d Plenary Session of the 11th Party Central Committee, China's state-run industrial enterprises implemented pilot projects in expanded autonomy and on this foundation implemented the economic responsibility systems rather widely. The practice of the past 3 years proves that this restructuring direction was correct and the results are evident, it has a broad mass foundation and conforms to the demands of objective economic laws. This 3 years of practice has begun to smash the restraints of the existing system with regard to mobilizing the initiative of enterprises and employees, has promised growth of production, invigoration of the economy and changed the face of enterprise and it has played an important and positive role in restructuring production, allocation, and circulation. However, in the process of development some problems have been encountered which need to be taken seriously and must be resolved, leadership must be conscientiously strengthened, experience constantly summarized and, while maintaining the stability and continuity of policy, make it constantly improved and upgraded, insure solid forward progress and play an even greater role in improving enterprise management and upgrading economic results.

I. The Important Significance of Implementing Economic Responsibility Systems. In his Report of the Work of the Government at the Fourth Session of the Fifth People's Congress Premier Zhao Ziyang stated: "Ideologically, we must fully understand the great and far-reaching significance of implementing economic responsibility systems." In 3 years of practice we have gradually improved and deepened our understanding of its important significance.

First, implementing the economic responsibility system is an important part of restructuring the economic management system. With the shift in key points of emphasis of the work of the party and under the guidance of the line of the 3d Plenary Session of the 11th Party Central Committee, the broad cadres and employees have summarized historical experience, analyzed China's national

situation, urgently demanded restructuring and blazed a new path to accelerate China's economic development. The important defects which existed in our past economic management system were centralization of authority and "everybody eating from the same pot." Under this kind of system, enterprise profit and loss is taken care of uniformly by the state, and enterprise production and management activity is arranged for by upper echelon plans so that the enterprise and the employees are in a passive and powerless position, enterprise economic interests are not connected with its management results, employee income is not connected with the results of their labor, and it doesn't matter whether management is good or not or whether things are done well or not. This hampers the initiative of the enterprise and its broad employees and obstructs the better development of the economy. Clearly, if this system is not restructured it will not be favorable for mobilizing the positive feelings and initiative of the enterprise and the employees for production and management nor will it be favorable for the development of society's productive forces. Expanding enterprise autonomy and implementing economic responsibility systems in implementing the policy of planned economy as primary and market regulation as secondary focuses on the existing defects in the economic management system and searches for new roads so that the enterprise can really engage in the important practice of unity of "responsibility, rights, and interests."

Second, implementing the economic responsibility systems is necessary for accelerating the four modernizations by relying on and exploiting the potential of existing enterprises. In the 32 years since the People's Republic was founded, we have already established over 370,000 industrial and business enterprises (including 84,000 which are publicly owned) with fixed assets of billions of yuan and a very considerable material and technological base with great potential. When speaking of the 10 policies for economic construction for China's future, Premier Zhao Ziyang said that we should really proceed from China's actual circumstances and take a new road which has rather solid rate of speed, better economic results, and from which the people can secure more material benefits, it is necessary to exploit the potential of existing enterprises fully and raise economic results. Expanding enterprise autonomy and implementing economic responsibility systems with a view to mobilizing the initiative of enterprises and employees provides enterprises with inner impetus, urges them to strengthen readjustment, improve management, and at the same time provides them with suitable funds so that they can carry out technological reform and renewal of equipment relying on their own strength creating the conditions to gather strength for national economic development. Therefore, implementing economic responsibility systems not only is an important measure relying on the masses to invigorate the economy, increase production and income and win out over difficulties, but basically speaking is also a necessity relying on enterprises to fully exploit potential and take a new road to accelerate China's economic development.

Third, implementing economic responsibility systems is an important measure for developing the employees' sense that they are the masters and operating socialist enterprises relying on the workers. Employees generally are the masters of socialist enterprise and they should have the right to be masters in their own houses and manage the enterprises. Only when employees have been put in the position of masters can they have the sense of responsibility of

masters. Implementing economic responsibility systems and giving the employees the right to carry out democratic management and to be their own masters provided the actual substance and material foundation to make employees more concerned about the results of enterprise management and to meet their responsibilities to improve enterprise management results, that is, to bear the responsibility for the state plan and the needs of the people. This is where the important significance of implementing economic responsibility system lies.

The leadership comrades of the Central Committee and the State Council have given a very high evaluation of system restructuring and implementing economic responsibility systems. Comrade Chen Yun said that engaging in system restructuring and economic responsibility systems now has smashed "the big pot" and "the iron rice-bowl" but that its significance was no less than the socialist transformation of privately operated industry and commerce. With the further development of economic responsibility systems, and their constant improvement, their important and far-reaching significance will be better understood by people. We should continue to adhere to the ideological line of practice, understanding, more practice, better understanding, and resolutely continue to implement economic responsibility systems.

## II. The Process of Development of Economic Responsibility Systems

State-operated industrial enterprises went through a process of exploration in implementing economic responsibility systems. It was the continuation and development of expanding enterprise autonomy pilot projects. For the past 3 or more years this has generally gone through three stages:

First, the pilot stage of expanding enterprise management autonomy in state-operated industrial enterprises. From late 1978 to 1979 pilot projects in expanding enterprise autonomy were carried out first in 100 enterprises in Sichuan and in 8 selected enterprises in Beijing, Tianjin and Shanghai from the State Economic Commission, the Ministry of Finance, the Ministry of Foreign Trade, the People's Bank of China, the State Bureau of Labor and the Bureau of Goods and Materials and raised the curtain on restructuring the enterprise management system. In July 1979, the State Council first issued a notice on organizing pilot projects in line with some stipulations on expanding autonomy on management of state-run enterprises and four other documents on restructuring the management system which promoted the development of work in pilot projects to expand rights. In line with the demands of the State Council's notice and the policy of initiative and stability, regions and industrial and business sections selected a group of enterprises which had been readjusted well, had good managerial foundation and were profitable which after approval by the State Economic Commission and the Ministry of Finance were made pilot projects. By the end of that year, the number of pilot project enterprises in expanding rights had increased to over 4,200 and some very evident economic results were achieved. The production and managerial activity of these enterprises began to pick up and they changed the stifling overcentralization of the past and took on an entirely new look. Even though restructuring has only taken its first steps, they are very significant steps.

Second, the stage of further expanding pilot projects and adopting a variety of forms. In January 1980 the State Council approved and forwarded on an experimental method for state-run enterprises to retain a portion of their profits which had been formulated by the State Economic Commission and the Ministry of Finance. This method stipulates that enterprises with expanded authority implement a system in which a base profit portion is retained plus a portion of the increased profit. At the same time, it put forth a demand that assessment be conducted on output, quality, profit, and supply agreements. This was unquestionably a step forward. However, in implementing the method there was some "arbitrary uniformity" and "huanbi" [3883 3024] in calculating the retention base which is not suited to the different conditions of various types of enterprises and not favorable for mobilizing the initiative of some advanced enterprises. Therefore, on the basis of a summary of the experience of the first stage and proceeding from actual conditions, in the allocation of the profit of state and enterprise, in addition to the method of retaining a portion of profits which was passed down in Document 23 of the State Council, the methods of retaining a portion of profits from overfulfilling the plan, contracting for profit and loss of profits, and "replacing profits with taxes and being responsible for profit and loss" would also be implemented. With the development of reorganizing and alliance and the restructuring of the management system of industry, pilot projects in retaining a portion of profit and profit contracts implemented by business (bureau, company) or county (city) increased daily. In September 1980, the State Council issued Document 226 (1980) affirming this method and clearly pointing out that pilot projects should proceed from actual circumstances. Things should be adapted to local conditions and not engage in "arbitrary uniformity." Because of their unique conditions, a few enterprises were permitted, with approval, to adopt some reasonable changes. In this 1 year the number of enterprises with expanded authority increased to over 6,000 which accounted for 15 percent of the state-run enterprises included in the budget, 60 percent of the gross output, and 70 percent of the profits. Not only was the scale of the pilot project enlarged, but the forms also were diversified avoiding "arbitrary uniformity," strengthening suitability, and mobilizing the initiative of all kinds of enterprises to participate in restructuring. This then accumulated experience and created the conditions for implementing the economic responsibility systems in industrial production.

Third, the stage of implementing economic responsibility systems in industrial production. In April 1981 at a National Conference on Industrial and Communications Work convened by the State Council, in accordance with the spirit of the directives of the leadership comrades of the State Council, the demand was put forth that industrial enterprises should gradually begin implementing economic responsibility systems. In the State Council's Notice on This Year Stressing Production in Industry and Communications, Striving To Increase Output and Increase Income, and Guaranteeing Completion of the State Plan making the profit and loss contract method and retention of a portion of the profits which had taken shape in practice of expanding rights in the 2 previous years was approved as a policy for distributing income between the state and the enterprise in economic responsibility systems in industrial production. From this point on, economic responsibility systems in industrial production began to be implemented very rapidly in industrial enterprises

throughout the country. To strengthen guidance and oversight, in October and November 1981, the State Council issued documents in particular approving for forwarding views on certain questions in implementing economic responsibility systems in industrial production and provisional regulations which had been jointly formulated by the State Economic Commission and the System Restructuring Office of the State Council, clarifying the content of economic responsibility system and the demands and principles which must be obeyed, formulated concrete policy limitations, and strengthened oversight measures which guided economic responsibility systems along the correct path of development of improving management and upgrading economic results.

From pilot projects expanding enterprise autonomy to implementing economic responsibility systems was a developmental process which was in accord with the law and with logic. The key emphasis in expanding enterprise autonomy was to resolve the problem of enterprise autonomy being too limited, and to provide the enterprise with the internal impetus to invigorate the enterprise; yet implementing economic responsibility systems demands that "responsibility, rights, and interests" be closely combined, that "responsibility" be placed in the leading position and thus explain more clearly the aim of expanding enterprise autonomy. Implementing economic responsibility systems not only demands that the relationship between the state and the enterprise be handled correctly, but also stresses that the relationship between the enterprise and the employees be resolved successfully to solidly ground at each level within the enterprise the economic responsibility which the enterprise has accepted with regard to the state. These are the two indissoluble links within the economic responsibility system. The two are closely linked, coordinated and complement each other. Economic responsibility systems not only demand that the enterprise's economic interests be linked with the profit it realizes, but also demands that the responsibility that it accepts and the overall economic results that it realizes are linked together.

This explains why implementing the economic responsibility systems is a continuation and expansion of expanding authority. In comparison with expanding authority its guiding thought is more comprehensive, and it is expanding in the direction of greater improvement.

### III. Implementing Economic Responsibility Systems and Securing Evident Results

Up to the present, state-run industrial enterprises above county level which have implemented economic responsibility systems account for 83 percent of the enterprises included in the national budget and over 90 percent of the value of output and profit. The reason why it has developed this rapidly certainly has much to do with the need to complete the financial mission, but the fundamental reason is in the demand that it conform to the development of objective economic law, being the will of the people it was imperative. Although the period of implementation has not been long there have been very clear results.

First, the initiative of the enterprises and employees was mobilized and increases in production and income were promoted. On the foundation of realizing increases in production and income in 1979, the more than 6,000 enterprises which had their authority expanded in 1980 also made very good achievements.



The profit handed over to the state by these pilot project enterprises in 1980 increased 6.3 percent over 1979. In 1981, due to the readjustment of the national economy, heavy industry's mission was inadequate, the prices of raw materials rose and the prices for goods fell, and their social burden was made heavier. The factors which led to a reduction in revenue and an increase in expenditures increased, the norms for financial planning which were sent down by the state were very hard to meet. After implementing the economic responsibility systems, the initiative of the enterprises and the employees began to be mobilized, wealth was sought by all means possible from management, technological reform, and comprehensive utilization, changes took place in enterprises and there was an increase in economic results. Because factors that reduced profit increased, in 1981 Beijing's 15 industrial bureaus could only meet 2.1 billion yuan of the 1981 financial mission set for them, though the city had asked for 2.37 billion yuan as a necessary part of the plan. Through implementing a profit contract the figure was set at 2.5 billion yuan and at year-end they had actually completed 2.55 billion yuan, overfulfilling the plan by 7.6 percent. According to statistics from relevant departments, the amount of profit transferred to the state by industrial enterprises nationwide in 1981 was 3.8 billion yuan less than in 1980, a decrease of 8.5 percent, however, because of vigorous development of consumer goods production, light industry's product profit was low, but taxes were high so that the value it created to a major extent was transferred to the state in the form of taxes, therefore the industrial and commercial taxes transferred to the state in 1981 increased 3.0 billion yuan compared to 1980, an increase of 7 percent. The main reason why profits declined is that the factors causing enterprises to increase expenditures while decreasing income increased. If we eliminate these factors, and analyze it according to comparable specifications, the profit transferred to the state by industrial enterprises in 1981 did not decline, but increased. This goes to show that by implementing the economic responsibility systems and mobilizing the initiative of enterprises to increase production and income they were able to get these good results, otherwise it would have been impossible to have such a good situation as we have now.

Second, overcoming "eating from the same pot" and egalitarianism in allocation in a preliminary fashion. With the implementation and further development of the economic responsibility systems the phenomena of "eating from the same pot" and "egalitarianism" of the past have been changed in a preliminary way. In profit allocation between state and enterprise a variety of forms of profit retention and profit and loss contracts have been adopted; in internal allocation, many enterprises maintain the principle of first the state, last the collective, and then the individual. Within the scope of controlling the level of bonuses strictly according to state stipulations, maintaining distribution according to labor, a variety of methods were adopted, including calculating bonuses as a percentage of work completed, piece rate wages, overnorm piece rate wages, small collective overnorm piece rate wages, floating wages, and fixed contract bonuses to combine the economic interests of the enterprise and employee with the results of labor of the individual and the economic results of the enterprise, accepting differences, separating grades, and accounting strictly. To a certain extent, the problems of "it doesn't matter whether the enterprise is managed well or not" and "it doesn't matter

whether the work is done well or not were overcome and the major defect which had existed in the management system for a long time now was touched on. The Beijing Iron and Steel Company was a classic example. Between the factories and mines, departments, types of work, and posts within the company different bonus norms were determined depending on degree of importance, technical complexity, and labor strength, and bonuses were assessed and issued strictly depending on the norms of post. Bonuses were no longer an "iron ricebowl" but were based on the size of the increase or decrease in labor results and economic results, and floated up or down and were differentiated. They both controlled strictly the bonus norms and carried out to each according to his labor, mobilizing the initiative of the employees. The experience of many places and enterprises proves that separating grades reasonably within strict bonus control and according to clear norm assessment, overcoming egalitarianism it is possible to make use of the role of bonuses to encourage the advanced and spur on the backward; on the other hand, if the averages are relaxed, bonuses can no longer play their proper role.

Third, enterprise reorganization was promoted and management and administration was improved. Implementing economic responsibility systems gave added inducement to enterprises and strengthened employees' sense of being their own masters so that enterprise reorganization began to a self-conscious demand of the workers and this produced a clear upgrading of the level of enterprise management and administration. Implementing economic responsibility systems placed even higher demands on enterprise management foundation work and many enterprises strengthened fixed norm management, data and statistics, and economic accounting with a view to improving economic results. In Shanghai, of the statistics of 1,137 enterprises, 62 percent of the enterprises established two levels of in-house accounting and 90 percent established accounting by groups and teams. Many enterprises made the establishment of a solid position responsibility system a demand of improving the economic responsibility system. Because economic responsibility system was established at each level, "the person set the post, the post set the responsibility" the content of the original post responsibility system was enriched and the content of the original post responsibility system was enriched and the responsibility was further clarified, demands were made more concrete, accounting was stricter and it was linked more closely with economic interests and developed into a post economic responsibility system also motivated the reorganization and restructuring of specialized management of the enterprise making specialized management the center for upgrading economic results leading to a series of changes in managerial thinking and managerial methods and in the managerial system. For example, along with implementing the economic responsibility systems, the Capital Iron and Steel Company made upgrading economic interests the bridgehead and starting point for work at all levels of leadership and all departments. They first of all reorganized and restructured planning management from the past practice of using the development of production, technological, and financial planning as a comprehensive production and management plan and organically organized the production of all sections of the enterprise and managerial activity so that the enterprise changed from a purely production type towards a production and management type.

Fourth, changes in service direction and product mix were promoted and the inadequacies of the state plan were made up. After implementation of economic responsibility system, many heavy industrial enterprises could no longer fall back on the state to "eat from the big pot." They took the initiative to re-adjust the product mix, change service direction and expand service area and this played an important role in restoring production in heavy industry. The machine building industry which in the past had served basic construction gradually expanded to serve development of textiles and light industry, to serve development of agriculture, to serve enterprise technological reform and provided large amounts of mechanical and electrical goods for these departments. At the same time as this they also upgraded product quality, increased varieties, and entered the international market. In 1981 the volume of exports of mechanical and electrical goods increased 28 percent over the previous year, and was the year of the fastest growth in history. The Tianjin Universal Machine Company on the basis of the principle "in the near term we will have food, in the long term we have a direction" strove to develop market regulation and proceeding from the needs of their customers and without worrying about number of varieties or complexity of scale, and without worrying about small orders and low profits actively contracted for work, transformed old products, started up new products, organized production of complete sets, and started in on technological service with the result that in 1981 the company's value of production exceeded the state plan by 3.66 percent without loss by any enterprise.

Fifth, technological innovation and reform were implemented. Implementing economic responsibility systems increased year by year the enterprise's self-owned capital so there was a certain material foundation for technological reform and equipment renewal. In the past 3 years through expanding enterprise autonomy, implementing economic responsibility systems, enterprise profit retention and a portion of overfulfilled income there has been about 3 billion yuan in funds which can be used for technological reform, equipment renewal, developing new products, controlling the "three wastes" and the like, so that enterprises could rehabilitate, reform production technology and guarantee that every year in industry there would be a definite increase in rate creating conditions for steady growth in the national economy. In Shashi, Hubei, for the past 3 years 61.4 percent of the funds for the technological change of existing industrial enterprises have been self-raised and the results of little investment, rapid results, and good economic benefits have been achieved. Of the value of increased industrial production in 1981 74.3 percent was realized by old enterprises renewing and changing to increase varieties, improve quality and increase efficiency while only 25.7 percent was realized from newly increased capacity. It is very clear that the economic responsibility systems stimulated technological change and technological change also could make the enterprise secure greater economic benefits and create greater accumulation for the state.

Sixth, there have been improvements in employee standard of living and in collective benefits. From expanding authority to implementing economic responsibility systems, many enterprises have utilized retained profits to build employee residences and to operate numerous facilities for collective benefit. Materials from relevant departments show that in the past 3 years investment in urban employee residences nationwide has been 15.2 billion yuan, 220 million

square miles of housing has been built, and about 60 percent of these funds have been self-raised. In the 3-year period, Beijing industrial enterprises have begun construction on 3.4 million square miles of housing and completed 1.8 billion square miles helping with the housing shortage to a certain degree. On the foundation to developing production, employees in industrial enterprises can also receive annually a bonus equivalent to 2 months' normal wages. These visible and tangible material benefits have mobilized the initiative of employees and exploited potential to increase production and have made many contributions to the state.

IV. Conscientiously Summarize Experience, Constantly Perfect and Improve  
Implementing economic responsibility systems is a profound change in the economic management system and touches on many aspects of the readjustment of managerial jurisdiction and economic interests. The force of habit of egalitarianism and "everybody eating from the same pot" which people have formed over a long period of time is also difficult to change overnight and at the same time, some areas and enterprises have not kept up in managerial work and ideological and political work. With the added burden of short time, heavy task and insufficient experience it is hard to avoid having certain defects in actual work. For this reason, it is not sufficiently perfected and there are still many problems which await exploration and resolution. Our mission is while affirming the restructuring direction to conscientiously summarize experience, praise achievement, and overcome defects so that the economic responsibility system will constantly improve. Practice of the past 3 years has already acquired the important experience in the several areas below and perfecting the economic responsibility system will require paying attention to the resolution of several problems.

First, in implementing economic responsibility systems, the primary problem is to rectify guiding ideology and comprehensively and correctly understand the aims and significance of economic responsibility systems. The economic responsibility system is a production and management system which closely combines responsibilities, rights, and interests under the guidance of the state plan with the aim of upgrading economic benefits and correctly handles the relationship of the interests of the state, enterprise, and employee. It is not merely a problem of distribution of profits, but it first of all should clarify and establish the economic responsibility which the enterprise and the employee bear towards the state. At the same time, it links together the economic interests of the enterprise and the employee with the results of enterprise management, changes the past situation of it not mattering whether one did a lot or a little or if one did it well or not, and mobilize the initiative of the enterprise and the employee to create more wealth for the society, increase more accumulation for the state, and make more contributions to the four modernizations. Many enterprises clearly understood this kind of guiding thinking and after implementing economic responsibility system paid considerable attention to placing the interests of the nation in first place, guiding the initiative of the employees to exploit enterprise potential fully, seeking wealth from improving management, from improving technological change, from reducing expenditures and lowering costs, by all means possible improving economic results and thus demonstrated the enormous power of economic responsibility systems. However, there were a few units which only understood the

economic responsibility systems as a restructuring of the profit share, profit and loss contracts, and the bonus system and did not take the time to thoroughly establish the economic responsibility system at all levels but merely in allocation work documents improperly emphasized the interests of the enterprise and the employee, wrangled over base figures, and ratios, hoping to maximize the interests of the enterprise in general and minimize the interests of the state as a whole, paying serious attention to immediate interests and ignoring long-range interests, some even injured the interests of the state, sacrificed the interests of the consumer and engaged in crooked practices. Clearly, all these things violated the fundamental aim of the economic responsibility systems. Practice proves that repeatedly educating the broad cadres and employees to comprehensively and correctly understand the aims and significance of implementing the economic responsibility systems and firmly establishing the guiding ideology of improving economic results and making greater contributions to the state is the key to healthy development of the economic responsibility systems.

Second, in implementing economic responsibility systems it is necessary to combine it with overall completion of the state plan. Under China's present circumstances, because the factors which influence enterprise profits are multifaceted, in particular differences in prices, revenues, resources and production conditions, the amount of profit created by an enterprise cannot completely reflect the managerial level of the enterprise. Under these circumstances, if one only assesses profit norms, it is easy to get the idea that large profits mean much work, small profits mean little work, and overlook phenomena of variety and quality which influence the overall completion of the state plan and creating a dislocation between production and needs. To prevent the tendency of one-sidedly pursuing profits, many places and enterprises are groping in a preliminary way for experience in better unifying the economic responsibility systems with the state plan. They are not only just contracting for profits and assessing profit norms but are contracting, guaranteeing and assessing comprehensively each technological and economic norm. Making each task stipulated by the state plan into a responsibility which the enterprise must complete, with regard to the state, in addition to the amount of profit which must be transferred to the state under contract, in line with the special characteristics of different businesses and enterprises, the appropriate norms which should be stipulated including quantity, quality, variety, amount to be allocated within the plan, costs, expenditures, supply contracts, and including as well norms for value and use value and depending on whether these economic norms were completed successfully or not, then increase or decrease as relevant the portion retained by the enterprise. So that plan sent down by the state and the cooperative demands of various aspects are guaranteed to be realized, within the enterprise economic norms should be implemented by levels to each shop, team, and individual, establish specialized responsibility systems for production, planning, technology, management, finance, and post economic responsibility systems, so that the person determines the post, and the post determines the responsibility, contracting and guaranteeing by level so that contracting and guaranteeing are combined, and carry out strict assessment and distinguish between rewards and fines. Practice proves that this kind of comprehensive contract guarantee and comprehensive assessment which closely combines the three elements of

responsibility, assessment, and rewards and punishments, i.e., whether or not the economic responsibility systems can be firmly grounded, is an important guarantee that economic results can be upgraded and is also an important guarantee as to whether productive and managerial activity of an enterprise can better conform to the state plan and the needs of society.

Third, in implementing the economic responsibility systems it is necessary to handle correctly the relationship of the interests of the state, enterprise, and employee and uphold the principle of first guaranteeing the greater gain of the state. In handling the relationship between the interests of the state, the enterprise, and the employee, how to guarantee first of all the greater gain for the state and at the same time mobilize the initiative of the enterprise and the employees is a very important policy question. Comrade Chen Yun pointed out that first, one wants to eat and wants to eat one's fill but cannot eat too little but also one cannot eat too well; second one wants to build, but if a state uses everything up, then that state will have no future. This statement of Comrade Chen Yun's is an extremely important guiding principle for our correct handling of the relationship between the three elements. When determining the level of enterprise profit retention, on the basis of several years experience, first of all, it should be guaranteed that there is a definite increase in rate of state revenue year by year; the increase in the magnitude of enterprise profit retained cannot exceed the magnitude of the increase in production and profit; the allocation of the increase portion of annual profit of profitable enterprises should maintain the principle that the state gets the greater share. Under these preconditions, provide the enterprise with the economic interests to encourage the enterprise to improve management and the initiative to exploit potential and guarantee the necessary conditions for the enterprise to resolve its need to maintain simple reproduction, renew and change, and develop new products; at the same time, on the basis of the different situations and characteristics of regions, businesses and kinds of enterprises, there are differences and things cannot be done with arbitrary uniformity. The problems of "uneven distribution of suffering and joy" and the disparity between profits between businesses and enterprises which are occasioned by objective factors can only be handled by adopting the necessary administrative measures and economic methods to achieve suitable regulation. For example, the methods of "internal settling prices," "profit rectification method," "raw materials price increase method," and "quota cost method" which were implemented by the Shanghai Textiles Bureau are worthy of serious consideration.

In terms of distribution relationships within the enterprise, the major portion of the enterprise retained funds should be set aside for developing production, technological reform, facilities for labor protection and the smaller portion used for employee bonuses. The level of enterprise rewards should float depending on changes in enterprise production, profits, quality and costs, rising and falling. Drops in production and profits, lowering of quality, and increases in costs should lead to commensurate decreases in the level of rewards. In view of the fact that the problems of relative weakness of quota management work in enterprises now, a general lowering of labor quotas, and excessive issuance of rewards have not yet been completely stopped, it is absolutely necessary to place some limitation controls on granting bonuses.

Within the limitations ratified by the bureau in charge, enterprises should implement allocation according to work and overcome egalitarianism by practicing more pay for more work, less pay for less work and not award bonuses unless work is in excess of the quota. In implementing piece-work wages, the conditions should be strictly controlled, where it is already in effect there should be summarizing, reorganization, and readjustment. In carrying out quota advance, and reasonable unit prices the content of unit commodity wages can only be lowered and cannot be raised. Whether or not these principles can be fully implemented lies with whether or not the enterprise leadership team has firm party spirit and whether or not it can see the larger view, and whether or not it can obey in exemplary fashion state policies, laws, regulations, and stipulations.

Fourth, in implementing economic responsibility systems, enterprise planning direction and supervision should be strengthened and the necessary external conditions for the enterprise should be actively created. The smooth implementation and healthy development of the economic responsibility systems should develop the subjective activity of the enterprise and require the cooperation and support of all departments. The planning committee, economic committee, commerce, materiel, finance, banking, foreign trade, pricing, labor departments and departments in charge of the enterprise should all bear their appropriate burden and both create the necessary external conditions for the enterprise and help the enterprise invigorate the economy as well as adopt effective measures and strengthen guidance and oversight of the enterprise's planning. Policy invigorates a part and oversight should strengthen a part. If implementing the economic responsibility system has mobilized the initiative of the enterprise and the enterprise's self-owned funds have increased, then relevant departments should strengthen guidance and promptly provide the enterprise with economic information and market forecasts to help the enterprise make the correct management decisions and avoid blind duplication in production; constant supervision and oversight should be maintained over enterprise implementation of the state plan to prevent the enterprise production and management activity from departing from the correct track of the state plan. That the enterprise is using correct methods and correct paths to secure correct interests should be safeguarded; using improper methods to secure illegal interests must be interfered with and punished. In implementing the economic responsibility system if an enterprise had an urgent demand for strict economic accounting and was particular about economic results, this requires that economic leadership departments upgrade the precision and scientific nature of planning, actively help the enterprise articulate production, supply and consumption, and deal with the cooperative relationships between upper and lower echelons and between left and right sides; at the same time, forceful measures should be adopted to lessen the enterprise's social burden. The above situations demonstrate that in implementing economic responsibility systems economic work leadership organs and sections bear a dual responsibility: one is to take the initiative to reform their own work and actively create conditions for enterprises and continue to invigorate the economy; and the other is to strengthen guidance and oversight. This guidance and oversight is to guarantee that enterprise initiative is better developed in conformity with the demands of coordinated development and overall balance of the national economy.

Fifth, in implementing economic responsibility systems it is necessary to uphold the principle of ideology taking the lead and vigorously strengthen ideological and political work. Implementing economic responsibility systems must have forceful and strong ideological and political work as a guarantee, correctly handle the relationship between ideological and political work and material incentives, and uphold stressing building a material culture on the one hand and building a spiritual culture on the other. The experience of many enterprises demonstrates that after implementing economic responsibility systems, ideological and political work is not something which can be relaxed, but has even higher demands and an even more important mission. The important position of ideological and political work in the new period should be clarified and placed in its correct relationship with economic work. Capital Iron and Steel Company said, "Ideological and political work is the first line, and day and night concentrates on raising people's consciousness." This is the basic reason why our economic responsibility systems have worked so well. The sense of political responsibility is the heart and soul of the economic responsibility systems. The establishment of economic responsibility systems cannot look only at economic methods, nor can it simply engage in administrative orders, but must rely on a high degree of sense of political responsibility of the employees. Implementing economic responsibility systems is related to the personal interests of the enterprise and the employees and in practice many new contradictions and problems are encountered which require pertinent and persuasive education through political and ideological work to raise understanding, treat correctly, and handle appropriately before the power of the economic responsibility system can be fully exploited. At present, particular attention should be paid to strengthening education among employees on the correct handling of the relationship between the three interests, and education to put the relationship between the general and the particular, the present and long-range interests in the correct perspective, propaganda and education on economic situations, and education to prevent the corruption of capitalist ideology. Through education the broad employees can be brought to understand the principle of "first we should eat, and second we should build," fully understand the economic development situation and the superiority of the socialist system, strengthen their overall point of view, establish their sense of responsibility as being their own masters, continue and expand the glorious traditions of the working class and the revolutionary spirit of unselfishness and bitter struggle, resolutely oppose selfish departmentalist and individualist trends, guide the initiative which has been aroused by the implementation of the economic responsibility systems correctly onto the path of improving economic results, walking a new road, and making greater contributions to the four modernizations.

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## ON THE AGRICULTURAL PRODUCTION RESPONSIBILITY SYSTEM

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[Text] Today more than 90 percent of China's rural production teams have established various forms of agricultural production responsibility systems. Establishment of production responsibility systems has promoted all-around increases in agricultural output and burgeoning of the rural economy. As Premier Zhao Ziyang pointed out in his government work report to the Fourth Session of the Fifth National People's Congress, "During the past 3 years we have broken the fetters of 'leftist' ideology, have made needed readjustments in rural production relationships, have respected the self-determination of production teams, have instituted various forms of responsibility systems, and have increased the enthusiasm for production of the broad masses of peasants so that the material and technical conditions that have been built up for many years have been put to better use, and so that agricultural productivity has been emancipated once again." Beginning now, large-scale changes in agricultural production systems throughout the country are a thing of the past; we must enter a state of stability, summarization and perfection. Under these circumstances, our study of the process of development of production responsibility systems, and study of their function and the trend of their development in socialist collective agriculture doubtlessly holds positive significance for further strengthening and perfection of all forms of production responsibility systems and for further development of a fine situation in rural villages.

### Agricultural Responsibility Systems Are a Kind of Management System in Agricultural Enterprises

Agricultural production systems are a kind of management system that China's collective agricultural enterprises arrived at in the production process for clearly stipulating the responsibilities and rights of production units and producers. They came into being and developed simultaneously with the collective agricultural economy in the process of the cooperativization and collectivization of agriculture, and are not something that just began during the

past several years. As long ago as the end of 1951, in "Decisions on Mutual Cooperation in Agricultural Production," the CPC Central Committee emphasized the building of some needed simple but easily workable production management systems and labor discipline, and called for institution of an equitable division of labor and division of industries on the basis of the needs of agriculture and individual skills so that everyone's talents would be used to the utmost. Subsequently, in the process of developing production the masses of peasants continuously created forms of responsibility systems suited to agricultural production cooperatives and advanced agricultural production cooperative management systems. In some communes and brigades, even today there are effective systems of "three contracts and one reward" (namely contracting of workpoints, contracting of output, contracting of costs, and rewards for overproduction and penalties for underproduction), which were created by the peasant masses at that time. However, because requirements placed on agricultural cooperativization during its late stages were overly demanding, work too shoddy, changes too fast, and forms too much of a single kind, the collective agricultural economy inherited some problems. The 1958 rural people's communalization movement allowed leftist errors to spread unchecked and this caused extremely great turmoil for the administration and management of agriculture. The "Revised Draft of Rural People's Commune Work Regulations" approved in September 1952 by the 10th Plenary Session of the 8th Party Central Committee summarized the lessons of experience since 1958 and provided clear and specific regulations on agricultural responsibility systems. It pointed out that in order to ease the organization of production, production teams could designate permanent or temporary work teams, and could designate parcels of land to be contracted out in small segments for work either seasonally or year round, with establishment of a strict production responsibility system. For the management of the animal husbandry industry, forestry, the fishing industry, and other sideline production, as well as for livestock raising, farm implements, water conservancy, and other jointly owned property, responsibility systems should also be instituted. Some responsibilities should be assigned to teams and others to individuals." However, under the influence of leftist mistakes, it was difficult to put into practice these forms of a responsibility system, and even harder to promote and perfect them. This led to development during the "Great Cultural Revolution" of the Lin Biao and Jiang Qing counterrevolutionary clique using leftist errors and pushing them to extremes. Agricultural production responsibility systems came in for criticism, and all forms of production in far-flung rural villages instituted, under highly centralized administration, "obedience to orders in farming the land, a big hullabaloo in doing work, lack of fixed work quotas, and the evening out of distributions." Responsibilities were not clearcut, rewards and penalties were not distinguished, and one did not necessarily gain more from more work. Such a chaotic situation put a damper on peasant enthusiasm for socialism, and it was difficult to bring into play the superiority of the collective economy, with the result that development of rural production was seriously inhibited.

The 3d Plenary Session of the 11th Party Central Committee summarized the experiences of history, formulated policies and measures to be taken to hasten agricultural development and stabilize the collective economy, and began the reorganization of production relationships and rural policies. In September 1979, the 4th Plenary Session of the 11th Party Central Committee formally

passed "Decisions on Various Problems Relating To Hastening the Development of Agriculture," which affirmed anew, and respected, and guaranteed the self-determination of production teams, called for strengthening of management over quotas, and set up a rewards and penalties system whereby "workpoints may be recorded according to fixed quotas, workpoints may be recorded and evaluation made on the basis of time, or else work may be contracted to work teams with calculation of compensation for work being linked to output, with rewards for overproduction provided production teams conduct centralized accounting and distribution." In September 1980, the CPC Central Committee published and distributed a document titled "Several Problems in Further Strengthening and Perfecting Agricultural Production Responsibility Systems," which affirmed various forms of responsibility systems and noted the following: In distant mountain regions and in impoverished and backward areas, institution of the contracting of production to individual households is a major means of linking up with the masses, developing production, and solving problems of warm clothes to wear and sufficient food to eat. Not long ago, the CPC Central Committee approved and forwarded "Minutes of the National Rural Work Conference," which contained specific regulations for consolidating and perfecting production responsibility systems. The party's correct programs and policies came to be understood within a very short time by the millions upon millions of the masses, and became a tremendous material force. Acting with the encouragement of the spirit of the Third Plenary Session, cadres and peasants everywhere proceeded from realities, liberated their thinking, courageously explored, and established within a very short period of time and within a broad scope various forms of production responsibility systems. These developed with tremendous force, rapidly, in many forms, with good effect, and beyond people's expectations. They movingly reflected the intense hopes of hundreds of millions of peasants for development of socialist agriculture in accordance with China's rural realities, and they also reflected the demand to get rid of the former overly centralized management system, blind direction of production, egalitarianism and various inequitable responsibilities in distribution, and the urgent desire to hasten agricultural development while following the socialist collectivist path. They reflected as well the brilliance and correctness, and the pervasive popular support of policies and measures formulated by the CPC Central Committee on the basis of the national realities facing the country's 1 billion population and its 800 million peasants, and were in accordance with peasant demands and desires.

As compared with the 1950's and 1960's, the production responsibility systems of the past 3 years are characterized in the following several ways in terms of guiding ideology and the circumstances of their implementation.

First is a high degree of understanding. Though China's collective agriculture began to establish production responsibility systems very early, they did not arouse sufficient understanding and serious attention. Several times they were suppressed and criticized by erroneous leftist ideology; they rose and fell several times, halted at times only to continue, and for a fairly long period of time they produced no great improvements or breakthroughs. Following the Third Plenary Session, in the course of summarizing the lessons of history, the CPC Central Committee highly evaluated and warmly supported the creative spirit of the peasant masses. It promptly summarized the practical experience

of the peasant masses, and made establishment and perfection of production responsibility systems a major link and a strategic measure for hastening development of agriculture. Under the guidance of the CPC Central Committee and through practice, the people came to realize that production responsibility systems were fundamental management systems for agricultural enterprises, and that their establishment and perfection were very much related to development of agricultural production, to consolidation of the collective economy, and to improvement in the peasants' standard of living. Establishment of production responsibility systems not only overcame the abuses of "eating out of a large common pot" that had long existed in the collective economy, but also, as a result of improvements in the organization of labor and methods of calculating remuneration, the partial readjustment of production relationships was spurred, longstanding overcentralization of management and use of a single form of administration were corrected, to make them fit it better with economic circumstances in China's rural villages. Making production responsibility systems the beginning of reform of the rural economic system sparked a benevolent cycle for the rural economy and for the entire national economy as well. Since understanding of responsibility systems was fairly high and the guiding ideology fairly clearcut, the entire process of motivating profound and complex changes in hundreds of millions of people developed in a substantially healthy way and progressed steadily.

Second was the many forms. Formerly the leftists had mistakenly set up numerous conventions. No matter the form of responsibility system, if it went beyond the bounds of the "conventions," it became suspect as a deviation from and rebellion against orthodoxy and was greatly lashed. A particularly great transgression was the contracting of output quotas to individual households, which was criticized back and forth for many years. In implementing and perfecting responsibility systems, rural cadres and the masses of peasants frequently encountered, "This won't do and that cannot be done." It was like walking on thin ice or skirting a deep precipice, every step of the way being hard going. By the time of "great criticism to stimulate great work," even the "three contracts and one reward" instituted during the 1950's as a system of responsibility had become "thoroughly refuted." Following the Third Plenary Session, the enthusiasm for socialism that had been brewing within the peasant masses spewed forth as from a volcano under the guidance of the CPC Central Committee's policies and, on the basis of circumstances prevailing in each place, production responsibility systems with names of every description and of various kinds and forms were created and obtained support from the party leadership. As the CPC Central Committee had pointed out: "All forms of responsibility systems that help encourage the maximum concern of producers for collective production, help increase production, increase income, and increase goods are good and workable and should be given support. There should be no restriction to particular forms, and no practice of arbitrary uniformity."

Third was broad scope. Formerly under the influence of erroneous leftist ideology, production responsibility development was greatly restricted. Now, however, the various forms of production responsibility systems practiced in each locale are a major reform under leadership of our party that fits in with national circumstances and are in accordance with the desires of the people. Consequently, just as bamboo sprouts following a rain, within a fairly

short period of time they have been established everywhere one after another. Today, individual forms of responsibility systems are spreading gradually from cropland production into agriculture, forestry, livestock raising, sideline occupations, fisheries, industry, and business, and are spreading and developing from the laboring peasants to grassroots level cadres, and into the field of science and technology. Their scope far exceeds that of any time in the past.

Fourth was major role. Formerly under the repression of erroneous leftist ideology, the role of production responsibility systems in readjusting production relationships and advancing development of agriculture was not brought to bear. Only now, as a result of the party's warm support, does the people's understanding of them steadily increase, are they established everywhere in all areas and steadily improved, and their tremendous role brought into play on an unprecedented scale. They pretty well solved the problem of an internal driving force for development of China's agriculture, and effectively took advantage of the superiority of China's socialist agriculture. As a county leadership comrade said: "Responsibility systems are the starter, and economic diversification is the breakthrough point. When both links are grasped at the same time, both the collective and individuals benefit and productivity is greatly emancipated once again."

Forms of responsibility systems currently in existence in different areas may be divided into two general kinds. One is a responsibility system not linked to output, such as the contracting of jobs to be done in a certain period of time with remuneration being calculated on the basis of fixed norms. The other kind is a responsibility system linked to output, which may be divided into several forms. Let us describe them individually as follows:

(1) Contracting of jobs to be done in a certain period of time with remuneration being calculated on the basis of fixed norms. The specific way in which this is done is as follows: Depending on the different stages of agricultural production and different methods used, the amount of farmwork to be done within a certain period of time is worked out and quantity and quality standards set for completion of each farm task, the amount of work required for each farm task being calculated and made the norm. Next, tasks are assigned work teams or individuals, remuneration calculated on the basis of the number of norms completed and quality standards attained, production teams being responsible for centralized accounting and distributions. This form is used in 16.5 percent of the country's basic agricultural accounting units.

(2) Specialized contracting with calculation of remuneration being linked to output. The way in which this is done is as follows: Under centralized production team administration there is cooperative division of labor; those workforces that are good at farming contract for cultivated land in accordance with their ability to farm it, and those who are good at forestry, livestock raising, sideline occupations, fisheries and industry contract work in the industry in which they are skilled in accordance with their ability. Contracting of fixed outputs to households in each industry is done on the basis of the principles of convenience in production and benefit to operations, with individual ways of making a living being individually contracted

to specialized teams, groups, households or industries, calculation of remuneration being linked to results in production. Production teams centrally conduct accounting and distribution with bonuses for overfulfillment of production and penalties for underfulfillment. This form is used in 5.9 percent of all cases.

(3) Linking of output to teams. The method used here is to divide workforces making a living in different ways into different kinds of occupational teams on the basis of their occupational skills, and then to apportion to each team a certain amount of cultivated land, farm implements, area to be sown to various crops, output norms, fertilizer, and seeds, with production teams setting work, output, costs, bonuses, and penalties for each team, calculating remuneration for each team on the basis of production results, the production team also conducting centralized accounting and distribution. This form is used in 10.8 percent of all cases.

(4) Linking of output to individual workers. The method is as follows: Adherence to centralized farming plans, centralized use of cultivated land, draft animals, and farm implements, centralized allocation of workforces, and centralized accounting and distribution, fields being assigned on the basis of workforces available to work them, outputs expected from each field being set, workpoints being figured on the basis of output, and rewards and penalties being set. This form is used in 15.8 percent of all cases.

(5) Contracting output quotas with individual households. The method used is as follows. Adherence to centralized leadership, centralized planning, centralized accounting, and centralized distribution, households being the basic operating units and production teams signing agreements with households, apportioning the land on the basis of the size of the workforce in each household or on the basis of workforce in the population (i.e. the proportion of workforces to population), with targeting of output (or output value), targeting of workpoints, and targeting of costs, bonuses given for overachievement and penalties provided for underachievement. This form is used in 10.8 percent of all cases.

(6) Contracting work tasks to individual households. The method used is the following. While adhering to public ownership of the land, production teams contract the farming of land to individual households in proportion to population or in proportion to the working population, with plow oxen and farm implements being assigned to individual households for care and use. State purchase quotas and collective withholdings are levied on individual households, and economic agreements are used to assure fulfillment of agreed upon quotas. Simply stated, this means that "once state and collective requirements have been fulfilled, the remainder belongs to the individual." This form is used in 38 percent of all cases.

Production Responsibility Systems Have Solved the Problem of an Internal Driving Force for Development of Socialist Agriculture in China

Among the production responsibility systems that have been established everywhere, those in which calculation of remuneration is linked to output number

more than 80 percent. Use of responsibility systems linked to output can properly coordinate collective and individual interests while at the same time bringing into play centralized collective farming and farming in which the workers make decisions for themselves, thereby effectively solving the problem of an internal driving force for development of China's socialist agriculture. Consequently, they have been put into general practice and have been enthusiastically welcomed by the masses. For the sake of convenience in narration, this article is devoted to this form of responsibility system linked to output.

How do responsibility systems linked to production solve China's problem of an internal driving force for development of agriculture?

First of all, they provide for peasant self-determination within collective production and they correct the overcentralization of the management system and blind direction in production so that the manpower, material and financial resources within production teams as well as natural resources are better linked. Under the former form of management, the tendency was toward "those farming the fields having no authority while those having authority not farming the fields," which stifled and damaged, to a certain extent, peasant enthusiasm for labor. Following institution of responsibility systems linked to output, commune members (or vocational teams) signed contract agreements with production teams, which clearly spelled out the responsibilities and rights of both parties. Within the limits spelled out in the agreements, commune members were free to plan production as they pleased. They possessed self-determination in the adaptation of farming methods to local situations and the choice of measures to increase yields, and they also had the right to refuse to follow blind direction. Such a delineation of rights established different responsibilities for both parties and solved the major problems of how, within the collective economy, to achieve centralized direction simultaneous with individual responsibility, collective administration of production simultaneous with decentralized management, and to carry forward democracy while at the same time effecting centralization. This solved many conflicts of long standing existing between leaders and commune members and between collectives and individuals. It aroused the enthusiasm of both cadres and commune members, linking them together.

Secondly, it put into practice the principle of distributions according to labor, and corrected egalitarianism and various inequitable responsibilities in distribution. Not only did responsibility systems linked to output delineate the rights of leaders and commune members in the organization of production, but they also equitably readjusted the economic benefits of collectives and individuals in the distribution of products, solving three problems in distribution: One was the close linking of the interests of the collective economy and the interests of individual commune members. If one were to say that the contracted portion more fully expressed the interests of the collective, then the portion in excess of contract more fully expressed the interests of individuals. Individual interests resided within the collective interest, and the collective interest included individual interests, "I being within you, and you being within me." In order to derive benefits from overfulfilling production, commune members had to fulfill their contract quotas first. The greater the overfulfillment of production quotas, the greater the

demonstration of responsibility toward collective production. Consequently, the linking to production was an internal driving force in active responsibility for collective production. Second was that the more commune members worked, the more they got. Agricultural production differs from industrial production in that when soil and other production conditions are identical, the fruits of labor differ very greatly depending on the strength or weakness of the workforce, how hard the workforce works, whether technical levels are high or low, how good the quality of operations, promptness, etc., and the production process in agriculture is not amenable to inspection. Only the final product of farm labor can fairly accurately reflect the quantity and quality of work done. However, the former use of "rigid recording of rigid workpoints" could not give expression to the more work the more gain. Today contracts linked to output are simple and easy to use and they pretty well put into practice the principles of remuneration in accordance with work, the more work the greater the gain in complex agricultural work. They also directly relate and give expression to commune member labor productivity and material benefits without going through a tortuous process. This is a fundamental reason for the arousal of commune member enthusiasm for production. Third was that contract agreements made perfectly clear commune member responsibilities to the country and to the collective, and gave full expression to the commune member spirit of being masters who love their country and the collectives. It also made perfectly clear the benefits commune members were to derive. They were "able to see them and feel them," effectively putting an end to the former "egalitarianism and indiscriminate transfer of resources," and the practice of certain cadres eating more and taking more, overcoming a situation of "cadres traveling around, crafty people standing around, and honest folks being so angry they do not want to work." Thus, within production teams, egalitarianism in distribution was corrected, and a position of equality among peasants in use of collectively owned means of production as well as the right to share equally in the fruits of labor came about. External to production teams it became both able to give expression to the responsibility that peasants should assume for the country and to give expression to peasant rights and interests as relatively independent producers of goods, thereby assuring peasant self-determination in economic benefits. Of all the factors in productivity, it is the workers that are the most active and most lively element. When the peasant masses use collectively owned means of production and have an attitude of being masters in the control of the product of their labors in carrying out their work, their enthusiasm and creativity can shine forth boundlessly.

Because responsibility systems linked to output solve the problem of an internal driving force in the development of China's agriculture, the superiority of socialist collective agriculture was brought further into play and the enthusiasm for production of the peasant masses was further aroused, thus providing great impetus to development of social productivity and improvement in the labor productivity rate in agriculture. This was manifested primarily in the following several ways:

- (1) Increased the Consciousness of Initiative of Peasant Labor and Increased Labor Efficiency. Establishment of systems of responsibility linked to output circumvented "blind direction of production," "a big hullabaloo about work," and "uniformity in distributions." How well one worked was closely linked to



his income and peasants became increasingly aware that they themselves were the principal figures in production. When they farmed the land themselves, it was as Marx had said, "individual interests will make them strain to the utmost to make the most of their own ability to work." ("Das Kapital," Vol 1, p 607) Formerly, "in the fields people called out to each other; at the approaches to fields people waited for others; at work people watched each other; and when quitting time came people rushed over each other." Today, however, "there is no need to drive people and no need to order people, yet each one rises earlier than others and works better than others." Work efficiency has improved many times over. At the same time labor resources have been effectively tapped in every regard. "When one person contracts for work, the entire family turns too." Males and females, the old and the young, able-bodied workers and skilled craftsmen all work to the full extent of their abilities. Even the "foreign affairs production team leaders," the "hoe-carrying commissioners," and the hustling "high ranking commune members" also go into the fields to work.

(2) Have Helped Economic Accounting and Have Raised Economic Benefits. Contract agreement fixing of norms for expenditures has forced contractors to calculate carefully in order to conserve on expenditures and increase earnings. At Rushan County in Shandong Province, collective hog raising and farm machinery were two matters that entailed large investment and high costs for poor benefits. Following implementation of responsibility systems linked to output, 69 percent of the county's 427 collective hog farms realized profits in 1980. Losses of 460,000 yuan in 1978 became profits of 161,000 yuan. Costs for machine farming fell from 0.54 yuan in 1978 to 0.43 yuan. Savings from this single item equalled more than 2 million yuan increase in earnings.

(3) Provided Favorable Conditions for Development of Economic Diversification and Readjustment of the Rural Economic Structure. Following institution of responsibility systems linked to output, peasants had the self-determination they could use to adapt general methods to local situations to arrange production in a rational way and develop economic diversification. Barren, poor, and otherwise unused land, as well as other natural resources were put to full use and commune member household sideline occupations developed markedly. A survey of 500 commune member households in Anhui Province showed income from household sideline occupations as a ratio of net income to have been 24 percent in 1978, 33.1 percent in 1979, and 45.5 percent in 1980. Thus, the structure of agriculture changed fairly rapidly principally in the farming industry, and this created favorable conditions for the promotion of social divisions of labor and the establishment of a production structure for all-around development of economic diversification.

(4) Helped Spread Agricultural Science and Technology. Today a craze to study science and to use science has started an upsurge in the far-flung rural villages. Peasants are very interested in attending scientific and technical discussions and in listening to weather forecasts and broadcasts on prevention and control of insect pests. They frequently ask farm technical personnel and experienced commune members to provide technical guidance. Formerly, it was not easy to get peasants to select seeds or to become interested in tract selection or ear selection. Now, not only is tract selection and ear selection

done, but some commune members even spread seeds out on a table and select them one by one before planting them. The peasants say, "Nowadays every family is a farm science team; every plot of land is an experimental field; and every person is a farm technician."

(5) Has Hastened Development of Agriculture and Brought About "Three Increases" (namely, increase in contributions to the country, increase in collective accumulations, and increase in commune member income). Institution of responsibility systems linked to output has brought about better use of the materials and technical conditions created over the course of many years, which has helped increase output and earnings. Even while maintaining its all time high output of grain, Liaocheng Prefecture in Shandong Province produced 4.1 times as much cotton in 1981 as in 1978, and forecasts call for prefecture sales to the state of 3.52 million dan of ginned cotton, five times the amount sold in 1978, plus sales of 20 million jin of fats and oils and 130 million jin of grain. In 1980, collective accumulations for the prefecture totaled 110 million for a twofold increase over 1978. In addition, production teams paid back state loans in the same year they had been made, and prepaid fixed sums totaling 76 million yuan while also repaying the state 26 million yuan or 28 percent of the total amount of old loans. In 1981 commune member earnings averaged about 170 yuan throughout the prefecture. This was 25 times 1978 earnings. Rural savings for the prefecture totaled 170 million yuan, a 120 million yuan increase over the previous year. Statistics show that from 1979 until the end of August 1981, 5,500 tractors were bought by collectives and individuals in the prefecture. This was 80 percent of the total number of tractors purchased in the 25-year period prior to 1979. Following the 1980 autumn harvest, more than 400,000 new houses were built in rural villages. This was the total number that had been built during the previous 5 years, and their quality has become increasingly high.

(6) Strengthened Bonds Between Cadres and the Masses and Improved the Social Atmosphere. Formerly cadres joined in working only irregularly and commune members did not like it. Now "there are responsibility fields and cadres have become commune members" who do a lot of work and there are fewer abuses. Formerly arguments occurred regularly about assignments of workers and work assignments, about evaluation of work and evaluation of relief, and about distributions of grain and money. In some production teams "big arguments occurred every other day and small arguments occurred every single day." Frequently "cadres would run their legs off to get things done while commune members would run their mouths to urge them on." Now both cadre and commune member rights and responsibilities are spelled out very clearly in written agreements, and this has solved very many conflicts. As a result of increased production and increased income, food to eat and clothes to wear, instances of theft, quarrels among neighbors, and family spats have diminished greatly. Some peasants who have become prosperous first have taken the initiative to pass on their experiences in becoming prosperous. They have helped hardship households with funds and skills in the development of production so everyone can become prosperous.

## Long-Term Unchanging Implementation of Production Responsibility Systems in the Rural Collective Economy

At a previous time some people supposed that the only form of responsibility systems would be contracting of sole responsibility for completion of work tasks to individual households, and that this form of contracting amounted to dividing up the land for farming by individual households. As a result they feared that responsibility systems would not endure and that policies would change. They feared both a change to a "great hullabaloo," and a change to households doing individual farming. This was, in fact, a completely wrong understanding. This notion resulted from the very rapid growth of production responsibility systems during the past several years in which people were unable to see clearly or grasp completely either their nature or their relationship to the collective agricultural economy. A considerable amount of blindness existed. Consequently, in order to strengthen and perfect production responsibility systems further, it was necessary, first of all, to eradicate apprehensions, calm people's minds, and to improve the conscious implementation and leadership of production responsibility systems. We should study these problems in theory and provide cadres and the masses with publicity and explanations to show that China's agriculture must adhere to the path of socialist collectivization, long-term and unchanging public ownership, and long-term and unchanging production responsibility systems.

(1) Adherence of China's Agriculture to the Path of Socialist Collectivization Is To Remain Unchanged for a Long Period of Time. Following liberation of the entire country, our party led the broad masses of peasants from the foundation of land reform to the socialist reform of the small scale agricultural economy, and guided several hundred million peasants along the path of collectivization. After more than 20 years of effort, in most places the rural collective economy has been consolidated, and the orientation of agricultural collectivization has come to be understood and supported by the broad masses of peasants. From the foundation of collectivization, conditions for agricultural production have markedly improved, and production levels have risen very greatly. Today a more than 670 million mu area of the country is irrigated; there are more than 600,000 large, medium and small tractors, various kinds of farm machinery have a total of 200 million horsepower; public property in communes and brigades has a value of more than 80 billion yuan, and gross output value of commune and brigade enterprises amounts to more than 60 billion yuan, or one-third the gross output value of agriculture. Comparison of 1980 with 1952 shows an almost doubling of national grain output and a more than doubling of cotton output. Despite very rapid growth of population, we are still able to rely on our own strength to guarantee the people's basic needs for food and clothing. Socialist industrialization and development of various other enterprises have also received necessary guarantees. Under conditions prevailing in China, it is impossible to suppose that modern agriculture can be founded on a small scale economic foundation of individual family farming to enable rural villages to divest themselves of poverty and attain joint prosperity. A more than 20-year history of agricultural growth shows that the collective economy cannot compare. There is no need to doubt that China's adherence to the path of socialist collectivization of agriculture and its adherence to public ownership of land and of the basic means of production will remain unchanging for a long period of time.

(2) The Collective Agricultural Economy's Practice of Production Responsibility Systems Is Also To Endure Without Change for a Long Period of Time. The foregoing noted that production responsibility systems are a form of management system and a fundamental principle of the collective agricultural economy. Wherever there is collective production or working together, responsibility systems are to be established. When we explore this matter further, we can discover that there are two aspects to its long-term nature. Looked at macroscopically, production responsibility systems act as a management system for the collective economy and are a fundamental measure for solving the problem of an internal driving force for development of China's socialist collective agriculture. They are not an expedient measure but will continue in being for a long time. Looked at microscopically, the various forms of responsibility systems have been voluntarily selected by a majority of commune members in production teams. Unless they want change, there will be no change, and they will continue for a long period of time. If better forms are to be adopted in the future, the masses completely have that right.

(3) Production Responsibility Systems Consist Not Only of the Single Form of Contracting of Full Responsibility for Work Tasks, but Rather the Coexistence at the Same Time of Diverse Forms. The foregoing listed the major forms of responsibility systems now in existence, the contracting of full responsibility for task completion to individual households being only one of them. In actual production activities, the number is even greater. Not only do various forms exist within the country, provinces, counties, and communes, but even within a single production team, various forms may be adopted depending on differences in kinds of production or types of operations. Even were there only a single form, when used in different areas its specific content would differ. Moreover, as a result of practice, the broad masses of peasants create a multitude of new forms based on varying production conditions in different places. As productivity grows, corresponding changes may also take place at different times in these forms as well.

Why are there so many forms of responsibility systems? Substance determines form. The substance is China's vastness and unevenness in economic development; agricultural production in which hand operations predominate, work is decentralized, the production cycle fairly long, and many aspects restricted by natural conditions; the aggregate role of many factors in rural villages as specifically manifested in the following: differences in the degrees of simplicity and complexity of production implements in individual areas, differences in the levels of culture and science and technology of workers, their production skills and management ability, differences in the production structure, production methods, and the kinds of things done; and differences in the size of production teams, living conditions, the farming system and customs, and the desires of workers, etc. Distribution of the country's more than 6 million production units over such a complex and varied landscape, each of them varying in their individual scale of organization and differing in their ways of doing things requires greater adaptability and more flexibility in the management of production, and requires adoption of more diverse forms of responsibility systems.

Only by clearly realizing these circumstances is it possible to consciously carry into effect the principles of adapting general methods to local situations and giving tailored guidance, and to avoid the errors of forcing individual places to fit into the same mold, to read the same canon, or to repeat "arbitrary uniformity." In addition, various forms of responsibility systems are only the embodiment of the scale of work organization and of methods of doing things; they do not necessarily symbolize forwardness or backwardness in production; rather each has its own suitability or limitations for certain places and conditions and are gradually perfected in practice. "Decisions on the Party's Various Historical Problems Since Founding of the People's Republic," which was approved by the 6th Plenary Session of the 11th Party Central Committee noted that "No fixed forms exist in the development of socialist production relationships. Our task is to create at every stage and on the basis of demands for development of China's productivity the specific forms that correspond to and help continued progress in production relationships."

(4) Contracting of Sole Responsibility for Work Tasks to Individual Households Is Not a Division of the Land for Farming by Individual Households, but Is Rather One Form of Production Responsibility Systems. Contracting of sole responsibility for work tasks to individual households is a unique management form that has grown out of the specific conditions existing in China's collective agriculture at the present time. After practicing this form, it changed into household by household farming with sole responsibility for profits and losses on a foundation of public ownership. Of all the various forms of production responsibility systems, this one is proportionately larger and the area of its influence proportionately greater. Therefore, its nature has become one of the focuses of the current debate about the responsibility system issue, and this issue is one that both cadres and peasants are particularly concerned about. Their fear of change is largely a fear of change in the contracting of sole responsibility for work tasks to individual households. What is the nature of the contracting of sole responsibility for work tasks to individual households? We believe it is a streamlining of the contracting of sole responsibility for production to individual households, that it is a form of a responsibility system linked to output in the collective agricultural economy, and that it is not a division of the land for farming by individual households. Our reasons are as follows:

First, contracting of sole responsibility for completion of work tasks is founded on public ownership of the land. The land for which commune members contract may not be bought or sold, may not be leased, may not be transferred, may not lie idle, and it is strictly prohibited to build houses, remove soil, or bury the dead on contracted land. When necessary, production teams have the right to take back or readjust the land that has been contracted. When commune members are no longer able to farm the land, or when they change to another occupation, the contracted land must be returned to the collective. Division of land for farming by individual households means the division of land owned by the collective among individual persons, public ownership of the land becoming private ownership for a change in the nature of collective ownership.

Second, contracting of sole responsibility for work tasks to individual households adheres to the principle of planned management and the dominant position of production teams as follows: (1) Use of written agreements to carry out planned management of households that have contracted sole responsibility for task completion, assuring fulfillment of state purchase quotas, centralized procurement quotas, and assigned procurement quotas, payment of public accumulations to collectives, and guaranteeing correct handling of relationships among the country, collectives, and individuals; (2) continued centralized management and centralized administration of collective industrial sideline occupations, water conservancy facilities, and some large farm machines, plus centralized planning, in some cases, for capital construction in agriculture; (3) centralized care of dependents of martyrs and military personnel, households enjoying the five guarantees [childless and infirm old persons who are guaranteed food, clothing, medical care, housing, and burial expenses by the people's communes], and hardship households. Following a division of the land for farming by individual households, the collective economy would collapse with each household using its own implements to farm its own land and carrying out production under the control of price laws. Except for the tendering of public grain to the country, there would be no withholdings for collectives, the superiority of the collective economy would cease to exist, and the small, private, individual economy that existed before cooperativization would revive.

Third, contracting of sole responsibility for tasks to individual households carries into practice the principle of distributions according to work. Quotas for the contracting of tasks were calculated on the basis of the "three contracts and one reward" system formerly practiced by production teams. They are a simplification of calculation procedures and distribution techniques whose methods are simple, that save cadres worry and set the minds of the masses at ease, that avoid uncompensated egalitarianism and indiscriminate transfer of resources, squandering, waste, and overexpenditures of funds, and that make a reality of the principles of the greater the work the greater the gain and the less the work the less the gain. These are the principal differences between contracting production to individual households and contracting of work tasks to individual households, and these are also the main reasons why numerous places have made a transition from contracting production to individual households to contracting work tasks to individual households. Individual households contracting completion of work tasks work under basically identical material production conditions. Through a system whereby individual households guarantee fulfillment of production and procurement quotas and agree to contribute a certain percentage of income to reserve funds for various purposes, they carry out a direct exchange of labor within production teams. This is the direct exchange of living labor of different forms and of different quality. Nevertheless, it is not done through "certificates" or workpoints, but rather through written agreements. Division of the land for farming by individual households is individual labor and is ownership of products created by one's individual labor. Individual producers do not carry out a direct exchange of living labor in the production process but rather carry out exchange at equal value of the products of labor within the area of circulation. Since it is founded on individual labor with private ownership of the means of production, it is a fundamental departure from the premise of distribution according to labor.

In the contracting of sole responsibility for work task completion to individual households, written agreements spell out the rights and responsibilities of production teams and work task contracting households in the production process. Consequently, this system is a management system for the collective agricultural economy, and it is not the division of land for farming by individual households. As productivity grows, it can gradually develop to become a more complete collective economy. Nevertheless, in communes and production brigades where leadership and management are not forceful, and particularly where the grassroots organization is paralyzed and the agreements system very imperfect, there is some possibility of sliding into actual division of the land for farming by individual households. This, however, is not a problem of the contracting of sole responsibility for task completion to individual households per se.

#### Further Strengthening and Perfection of Production Responsibility Systems on a Stable Foundation

Today various forms of production responsibility systems have been established throughout the country's rural villages, and they will maintain a relative stability within a certain period of time. Further strengthening and perfection of production responsibility systems on this stable foundation is a new problem we face.

Establishment and perfection of agricultural production responsibility systems bears on the distribution system and the farming system, and it also relates to changes in production relationships. Therefore, once established, it should not be changed frequently, but rather should be maintained relatively stable so as to help give impetus to the development and growth of new productivity, and so that the responsibility system will itself become increasingly perfect. Even though some problems may arise, changes should not be made lightly during the very busy seasons in agriculture. By waiting until the slack season, i.e., until the year end summarization, there will be both the time and it will also be possible to see clearly advantages and disadvantages as a result of a year's experience. There will be time to study unhurriedly whether or not improvements are necessary and how to make the improvements. This way of doing things does not impair production, but permits seeing things accurately to avoid issuing orders in the morning only to rescind them in the evening with "many policy changes."

Agricultural production responsibility systems have gone through a process of centralization to decentralization and decentralization to centralization. Analysis of pertinent data shows their common trend to have been from centralization to decentralization evolving to a combination of decentralization and centralization. The basic process has been development from no linkage to output toward linkage to output, from linking output to teams toward linking output to individual workers and toward the contracting of production to individual households (or contracting of sole responsibility for task completion to individual households). However, since China's specialized division of labor and its commodity economy are currently undeveloped, this trend toward specialization is only in an inchoate stage in some places.

This going from centralization to decentralization to a form of centralization and decentralization in combination is a specific form that meets China's needs for development of agricultural productivity. To proceed from realities in individual places and to handle well the relationship between decentralization and centralization so that whatever lends itself to centralization is centralized and whatever lends itself to decentralization is decentralized is the key at the present stage to the strengthening and perfection of production responsibility systems. It is also an important link in continued development of the very fine situation in rural villages. However, centralization and decentralization are not goals but rather methods. The goal is solution to the problem of an internal driving force in the development of China's agriculture to give impetus to agriculture's rapid growth. Nor can the size of centralized and decentralized components be used as a criterion for distinguishing the superiority or inferiority of forms of responsibility systems. Centralization must have as its premise no restriction of individual initiative, and decentralization must be predicated on no impairment to making use of the superiority of the collective for the achievement of proper centralization and equitable decentralization.

How can both centralized and decentralized in a combination of centralized and decentralized be realized for strengthening and perfection of production responsibility systems. On the basis of practice in individual places, the following several problems currently require satisfactory solution:

First, commune and brigade leadership teams must be put in shape so that production teams assume the responsibilities they should bear for economic functions. Since the situation has developed very rapidly and insufficient deliberation given in advance of events, corresponding policy measures not keeping pace, in some places, particularly in some communes and brigades where contracting of sole responsibility for task fulfillment to individual households has been done, some cadres do not understand or are not forceful, and some have not satisfactorily solved remuneration. Some feel that when "sole responsibility for task completion has been contracted to households, what need is there for cadres," and some are unable to lead, etc. As a result, leadership has been relaxed or abandoned to the point where no one is responsible for very many jobs. These ideological problems and real problems must be conscientiously solved so that their ideological understanding and work methods are suited to the new, changed situation and so they do a good job in managing the collective economy. Current management work consists primarily of the following: responsibility for equitable distribution and allocation of contracted land, and good care and use of cultivated land; laying out production plans and capital construction, and promoting new techniques; signing and putting into effect economic agreements, and fulfilling state procurement quotas and collective withholdings; care for the dependents of martyrs and military men and arranging for production and the daily life of hardship households. In addition, as circumstances require, a good job of ideological and political work and other social work must be done.

Second is protection of collectively owned property, and preservation and rational use of cultivated land. Wooded tracts, orchards, and water surfaces must be diligently managed through centralized administration or contracted to



households or teams. In order to assure coordination and centralization of land ownership rights and farming rights, commune members must engage in production on the land they have contracted in accordance with written agreement provisions and in accordance with collective centralized planning arrangements. Individual communes and brigades are to formulate overall arrangements for the building of houses and, insofar as possible, use barren slopes and hilly land or old house sites in building houses. Destruction of farmland to build houses is strictly forbidden.

Next, general methods should be adapted to local situations for the establishment and perfection of production responsibility systems in agriculture, forestry, animal husbandry, sideline occupations, fisheries, industry, and commerce to promote all-around development of the rural economy. Even in those production teams where farming is done by individual households, insofar as ability permits, everything possible should be done gradually on economic diversification such as running tea or forest farms, orchards, breeding farms, and industrial sideline occupations in the gradual development of specialized division of labor and specialized contracting, and for a gradual change in the contracting of land on the basis of population average, all of the workforce farming the land. The method used by Yichun Prefecture in Jiangxi Province is a rather good one. First they drew up the needs for land, workforces, and funds of each and every industry; then, on the basis of the desires of the masses and production realities, they established a corresponding production responsibility system. In Hunan Province, some counties and communes established a form of responsibility system even broader in its adaptability termed "centralized administration, specialized division of labor, responsibilities placed on individual workers, and distribution of the contracting of work tasks." This form both reflects a production team's multiple forms of responsibility systems and the coexisting situation at any given time, and also is suited to the nature of all-around rural economic development.

Finally, is the establishment and perfection of economic agreements systems. Economic agreements are a form of contract for coordinating economic activities and are a bond that links the economic relationships of the country, collectives, and individuals. Institution of a responsibility system linked to output requires that the economic relationships of production teams to peasant households or work teams, or specialized persons as well as the rights and duties of both parties be spelled out in the form of agreements. Agriculture must also adhere to taking the planned economy as the key link and must draw support from economic agreements to coordinate the requirements of state plans with the self-determination of production teams and the initiative of peasants so that state plans are put into effect in myriad households. In communes and brigades in which contract agreements have been fairly well implemented, most have been: (1) comprehensive signing of agreements being signed wherever a responsibility system exists; (2) effective certification that agreements have been carried out; and (3) active organization to honor agreements. Practice has shown that whenever this has been done, production develops, state plans can be fulfilled, and concurrent concern is shown for the welfare of the country, the collective, and individuals.

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## DEVELOP FOREIGN TRADE, PROMOTE SOCIALIST MODERNIZATION

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[Text] I. Recognize the Great Importance of Developing Foreign Economic Relations and Trade From the Plane of Strategy

Among the 10 principles laid down by Premier Zhao Ziyang at the Fourth Session of the Fifth National People's Congress, one of the important ones reads: "Persist in an open-door policy and enhance our capacity for self-reliant action." This is an important strategic policy decision made by the central authorities under new historical conditions for accelerating the socialist modernization drive after summing up the experiences at home and abroad, as well as an important guiding principle in developing our foreign economic relations and trade.

More than a century ago, Marx and Engels pointed out in the "Manifesto of the Communist Party": "[The bourgeoisie] has through its exploitation of the world market given a cosmopolitan character to production and consumption." In place of the old local and national seclusion and self-sufficiency, we have intercourse in every direction, universal interdependence of nations." Later, Lenin pointed out in his "Imperialism, the Highest Stage of Capitalism": "Capitalism is commodity production at its highest stage of development, when labor power itself becomes a commodity. The growth of internal exchange, and particularly of international exchange, is the characteristic distinguishing feature of capitalism." This situation has developed rapidly since the War. Along with the economic development in various countries, the internationalization and specialization of production and the development of transnational companies, the international exchange of commodities has continued to expand, international trade has grown rapidly, and the development of foreign trade and economic exchange among different countries in the world have become an important indispensable condition for economic development in all countries. The formation and development of the world market has shown that under modern conditions, the economic problem of a country has long ceased to be an isolated national affair; it should be investigated and studied in a world context. Therefore, the importance of foreign economic relations is all the more obvious.

The basic principle for our socialist modernization is to "maintain independence and keep the initiative in our own hands and to rely on our own resources." That is, in carrying out economic construction, we should mainly rely on the labor and wisdom of our own people, fully utilize our own resources and the economic foundation already laid and do our work well by acting independently and with the initiative in our own hands. However, acting independently and with the initiative in our own hands does not mean being contented with self-sufficiency or closing the country to international intercourse. A basic characteristic of socialized mass production is the expansion of exchange not only on a national, but also on an international scale. All countries in the world have their own strong points as well as their own shortcomings. No country whatsoever can possess all the resources required for its own economic development, or master all the advanced technologies in the world. Therefore, they must learn from one another so that each can gain something from others to make up for its own shortcomings. By developing foreign economic exchange and trade, they will also be able to supply to one another's needs. Our science and technology are backward, our production level is fairly low, and our construction funds are insufficient. It is therefore absolutely necessary for us to develop our foreign economic relations and trade on the basis of self-reliance so that we can bring into play our strong points, steer away from our weaknesses and make foreign things serve China in order to speed up our economic development and strengthen our power of self-reliance. It would be unthinkable for such a large country with a billion population like ours to carry out socialist modernization without actively developing foreign economic relations and trade. Of course, the development of foreign economic relations will bring with it certain problems, since there will be reflections in various ways from bourgeois liberalization in the economic sphere. In the face of these problems, we must maintain a sober mind, firmly uphold the four basic principles and the party's lines, principles and policies and resolutely resist the corrosive effects of bourgeois ideology and lifestyle. We must also clearly recognize the extremely complex nature of the new environment we face under our open-door policy, be good at constantly summing up and accumulating our experiences, and solve in good time the problems which may be created in our foreign economic contacts.

Foreign trade is an important component of foreign economic relations. Since the founding of the People's Republic, our foreign trade has been greatly developed under the guidance of the principle of relying mainly on our own efforts while regarding external assistance as subsidiary. By actively organizing our exports, we have obtained a large amount of foreign exchange with which we have imported foreign advanced technology, complete sets of equipment, huge quantities of mechanical and electrical appliances, raw materials and consumer goods which people need in their daily life. These measures have played an important role in developing our production, enlivening our market, bringing about economic prosperity, improving the people's livelihood, strengthening our power of self-reliance and promoting the socialist modernization. Our foreign trade has undergone new development since the adoption of the open-door policy at the 3d Plenary Session of the 11th Party Central Committee. This policy has played an increasingly important role in the development of our national economy.

However, we must be aware that the volume of our foreign trade is still fairly small; its scope is fairly narrow; the makeup of our import-export commodities is rather backward; many of our products do not meet the demands of foreign markets in either quantity or quality; and we have many problems in the system of our foreign trade management. These conditions are inconsistent with the needs of our socialist modernization and with the development of our foreign relations.

To carry out our socialist modernization program, we should use our domestic resources in the first place and international resources in the second; we should develop our domestic market in the first place and our role in the world market in the second; and we should master two skills, that of domestic economic management and that of developing foreign economic relations. We must be good at using the important channel of foreign economic relations, give full play to the role of the international market and actively develop our foreign trade. We must not confine our observation to our domestic conditions alone. Instead, we should proceed from the strategy of planting our feet firmly in our country and keeping in view the whole world in order to combine our abundant material and labor resources in our country with the vast international market and the various favorable conditions it offers in looking for a more effective way of development. Through international exchange and supplying to one another's needs, we can bring into play our strong points to make up for our weaknesses and to better serve our socialist modernization.

## II. Give Full Play to the Strong Points of Our Coastal Areas To Promote the Development of Our Foreign Trade

One of the strategic issues in our socialist economic construction is about the correct handling of the relationship between the coastal areas and the hinterland. In 1956, Comrade Mao Zedong pointed out the question of relationship between coastal industry and industry in the interior saying: "Making good use of the old industries in the coastal regions and developing their capacities will put us in a stronger position to promote and support industry in the interior. This directive is still of great significance today.

The coastal areas (meaning Shanghai, Beijing, Tianjin, Guangdong, Guangxi, Fujian, Jiangsu, Zhejiang, Shandong, Liaoning and Hebei, altogether 11 provinces, municipalities and autonomous regions) are in favorable geographic locations with good transportation facilities. With their high level of industrial production; they are the main bases of our national economy. The economy in coastal areas has undergone great developments since the founding of the People's Republic. In 1980, the industrial and agricultural output value in these areas amounted to 57 percent of the total national industrial and agricultural output value, and their industrial output value amounted to 62 percent of the total national industrial output value. There are in these areas a number of backbone plants engaging in light and textile industries, iron and steel industry, machinery industry, petroleum industry, chemical industry, building materials industry and electronic industry, and their high and medium-grade products are now fairly competitive on the international market. The development of foreign trade in these areas has also been rapid and they are occupying an important position in the entire foreign trade. In

1980, the products procured by the coastal areas for exports amounted to approximately three quarters of the total national volume of procurement for exports, and the volume of their exports was more than 90 percent of the total national exports volume. Furthermore, culture and education are more developed in these areas. They have a huge army of workers and intellectuals and their scientific and technological management level is high. They have had a long history of economic and cultural exchanges with foreign countries and there are many people experienced in foreign trade. All these are favorable conditions for developing foreign trade and the economy. Of course, coastal areas have their weaknesses too, such as the shortage of raw materials and fuel and the objective conditions restricting the further development of many enterprises. Therefore, the adoption of effective measures to bring into full play the strong points of the coastal areas, to overcome their weaknesses and to accelerate the economic development in these areas are of very great significance in developing foreign trade.

There is an unseverable link between the hinterland and the coastal areas; so giving full play to the strong points of the coastal areas and faster economic development in these areas will not only serve the purpose of coastal construction but also spur on hinterland construction. When the coastal economy has been developed, the hinterland will receive more aid; and when the hinterland economy has been developed, the coastal areas will have a more consolidated rear area. Therefore, mutual support and cooperation between the coastal areas and the hinterland are of great advantage to the development of our national economy and the raising of our economic and technical levels, including the development of foreign trade.

How shall we bring into play the strong points of coastal areas?

(1) Developing the processing of imported materials and the exports of finished products. In the past several years, the processing of imported materials has developed fairly quickly in the coastal regions. In Shanghai, Tianjin, Guangdong, Jiangsu and other coastal cities, the products processed from foreign materials for our export has amounted to approximately one-half of the total volume of procurement for foreign trade. Practice has proved that importing raw materials to be processed into finished products for exports is an important measure to make full use of our existing equipment, to develop the production of commodities for exports, to improve the quality of our export commodities, to change the makeup of these commodities, to earn more foreign exchange, to provide more job opportunities and to stimulate the economy.

The coastal cities have a good foundation for industrial production, a strong technical force, abundant manpower and good transportation facilities. However, they are short of industrial raw materials. Because of the great increase in domestic needs, it is anticipated that for some time to come, the supply of some important industrial raw materials and subsidiary materials will be tight. Furthermore, there are some varieties which cannot be produced in the country at present, or some varieties whose quality cannot measure up to the required standard. Therefore, while actively developing the raw material resources in our country, we must further develop the processing

of imported materials into finished products for exports. At present, the main form of our processing of imported materials is to import raw and semifinished materials to be processed into finished products for export, and the scope of business operation is mainly in the light and textile industries. On this basis, we can further develop the importation of the main and the auxiliary parts to be processed and assembled into finished products for exports; utilize home-produced raw materials and import the supplementary materials to be processed into finished products for exports; and so forth. The scope of this type of processing can be expanded beyond the light and textile industries, and the potential in the machinery manufacture departments is particularly good. In future, as long as our productive capacity and the availability of power are assured; our production technology is up to the standard; our products can be sold abroad; and the whole venture is practicable and beneficial to the state, we should be even more active in developing the processing of imported materials. And to support this type of processing, the problems in our policies and systems should be properly solved.

(2) Use foreign funds to import technology and to accelerate technical transformation for the existing export enterprises. The industrial enterprises in the coastal areas accounts for approximately 45 percent of the total number of industrial enterprises throughout the country, and the vast majority of these coastal enterprises are small and medium-size ones. Since the founding of the People's Republic, these enterprises have made important contributions to the development of our national economy and foreign trade. However, the equipment of these enterprises are somewhat out-dated and the technology used is somewhat backward. Equipment renovation and technical transformation are urgently needed by them. When these enterprises have been properly transformed, they will be able to further expand their production, improve the quality of their products and increase their designs and varieties in order to increase the sources of goods for exports, strengthen their competitiveness on the international market and improve the economic results. This is an important foundation for the expansion of exports and foreign trade.

Technical transformation for the existing enterprises should mainly rely on our own resources. However appropriate use of foreign funds and the importation of suitable advanced technology and key equipment in a planned and selective way are also one of the methods to promote technical transformation.

In the past several years, we have utilized foreign funds in various forms for technical transformation among the small and medium-size enterprises with good results. Since the technical transformation and equipment renovation projects for the majority of small and medium-size enterprises are carried out on their original foundations, they generally require little or no civil engineering, and the funds and materials needed for supportive projects in the country will not amount to very much. Therefore, there will not be many contradictions with other units. These projects can be quickly completed for commission and can yield quick results. Furthermore, since many technical transformation projects are directly serving the development of commodity production for exports, they will help to promote our exports and increase our foreign exchange earnings. Practice has proved that the use of foreign funds to import technology and to transform the small and medium-size enterprises calls for less

investment, and that the turnover of funds is faster with less risk, but greater benefits. It is an important and effective measure.

Of course, the use of foreign funds on the small and medium-size enterprises should be included in an overall arrangement and carefully planned. We must not blindly rush into action. We must exercise particular care in the choice of projects for restructuring and in conducting feasibility study. Priority should be given to, and more flexible policies should be adopted for those projects related to goods in short supply.

(3) Strengthen economic integration and technical cooperation between coastal areas and the hinterland. The hinterland and the coastal areas can form economic integration on the basis of mutual benefits and voluntary participation. Through joint venture, cooperative production, compensatory trade and many other forms, the strong points of the high technology of processing in the coastal areas and the abundant raw materials in the hinterland will be closely combined, and through this combination, we will achieve common economic development and rational distribution of economic benefits. This form of cooperation, as we can see, will be helpful in guaranteeing the source of supply of some important products with a promising future in exports.

To support the hinterland in economic development and in the promotion of foreign economic relations, the coastal areas should provide various facilities and take the initiative in offering good services to the hinterland. In foreign trade, the coastal areas should act as the hinterland's agents in purchasing, selling, storage and transportation, develop joint import-export operation and offer consultation, warehousing and other services in an elaborate, timely and dependable way.

### III. Conscientiously Sum Up Experiences and Further Restructure the Foreign Trade System

In the course of our national economic readjustment, we will steadily proceed with the restructuring of the economic management system. The system of foreign trade management is part of the overall economic system. To meet the requirements of foreign trade development, we should also actively and steadily restructure the system of foreign trade management.

Ever since the founding of the People's Republic of China, we have enforced the policy of controlled foreign trade whereby all foreign trade in the country is to be exclusively undertaken by the specialized foreign trade companies affiliated to the Ministry of Foreign Trade. This ministry also exercises a unified control over foreign trade. This system was gradually formed under the historical conditions of the past. It must be admitted that this system has played a positive role in the promotion of foreign trade. However, along with the development of international trade and the growing demands of our country on foreign trade, the former system, policies and methods can no longer be suitable for the developments and some defects are being gradually exposed. These defects are shown mainly as follows:

(1) Since the operation of foreign trade is mainly in the hand of the foreign trade departments, the production departments in the country can only supply goods for exports according to state plans, while the imported goods, exclusively controlled by the state, are not directly related to the amount of goods to be supplied for export. Thus there cannot be much relationship between the development of foreign trade and the local or departmental economy, and this hampers the initiative of the localities and departments in developing the production of commodities for exports and in expanding exports.

(2) Since the departments producing commodities for exports do not participate in foreign trade and do not know much about the foreign market, the combination of industry and foreign trade, or of production and marketing, will not work well, since the production departments cannot increase the production or improve the quality of export commodities in time to meet the requirements of the foreign market.

(3) All import-export profits are exclusively handled by the state and not related to local or departmental finance. This method of "eating from the same pot" hampers the enthusiasm and initiative of enterprises in improving their business management and in raising the competitiveness of the export commodities.

(4) Monopoly over foreign trade can easily enhance bureaucratism or the "bureaucratic" style of waiting for the call of customers instead of improving the service to production. There are also many problems with the operation and management.

After smashing of the "gang of four," the 3d Plenary Session of the 11th Party Central Committee decided to shift the focus of the work of the whole country to socialist modernization, and adopted the open-door policy. This calls for a scientific approach to economic management, and that is why the all-round restructuring of the economic system has been included in our meeting agenda. To accelerate the development of foreign trade and to improve its economic results, it is imperative that the system of foreign trade management be restructured.

While restructuring the economic system in the past 3 years, initial reforms have also been carried out in the system of foreign trade management. The former method of unified management by the specialized foreign trade companies is being changed, step by step, so that the departments, localities and enterprises under favorable conditions and after approval can also engage in exports at different outlets and carry out experiments in different forms of operation including the combination of production and marketing and of industry and foreign trade. The increase in foreign trade channels will help arouse the enthusiasm in all fields in developing foreign trade. However, restructuring the foreign trade system is a new type of work; and because of our inexperience, our work of management is lagging behind and some problems have cropped up in our import-export work. These problems are mainly shown by the "confusion" in our dealings with foreigners and sometimes by the competitions among different sectors resulting in undue economic loss for the state and affecting our foreign relations. They have already aroused widespread concern and active measures are being taken for their solution.



At present, in restructuring the system of foreign trade management, we should carefully sum up our experiences and then gradually perfect the reform. For future reforms, we should stress the need to arouse enthusiasm in all fields to promote foreign trade under the guidance of state principles, policies and plans and at the same time catch up in our work of management and coordination. We should also persist in unified action in dealing with other countries, bring into play the strong points of planned economy under the socialist system and protect the overall interests of the state.

The undertaking of foreign trade should be appropriately decentralized, and the enterprises should have certain decisionmaking power. This will help to arouse enthusiasm in various fields in undertaking, enlivening and developing foreign trade. We must firmly preserve unity in dealing with other countries, since we must keep in step before we can strengthen the competitiveness of our commodities on the international market, effectively implement our policies and have something to gain politically and economically. All enterprises in the country have basically identical interests, and are all under the unified leadership of state planning. Should it be claimed that there ought to be certain competition among the enterprises, then this competition should find expression in the improved quality, lower production costs, better reputation abroad, higher efficiency and more satisfactory service. This type of competition will help to encourage the advanced, spur on the backward, and increase production for exports. In dealing with other countries, however, we must take unified action, and no competition that may jeopardize the state's political or economic interests can be permitted.

The orientation of the restructuring of the foreign trade system is to gradually delegate the task of foreign trade to enterprises or combinations of enterprises. If the conditions are not yet favorable, we should gradually develop combinations in various forms according to the principle of mutual benefits in an economically rational way. We should in particular carefully organize the combination of similar products for export with the ports as the cores, strengthen the control by administrative departments, accept the supervision of the bank, customs and commercial inspection departments, and authorize the various specialized foreign trade companies to coordinate the work in exports.

By constantly summing up our experiences, we believe that the system of foreign trade management will be gradually perfected as a strong impetus to foreign trade development.

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UTILIZE FOREIGN CAPITAL ACTIVELY AND STEADILY, PROMOTE CHINA'S ECONOMIC DEVELOPMENT

Beijing ZHONGGUO JINGJI NIANJIAN (1982) [ALMANAC OF CHINA'S ECONOMY (1982)] in Chinese 1982 pp IV 94-IV 99

[Article by Ji Chongwei [1323 1504 1218]]

[Text] Foreign Fund Utilization in Our Country in the Past 3 Years

Since the open-door policy was decided in the 3d Plenary Session of the 11th Party Central Committee, we have actively and steadily carried out our work in absorbing foreign funds under the guidance of the principle of relying mainly on our own efforts while regarding external assistance as subsidiary. Since 1979, the standing committee of our National People's Congress has on different occasions promulgated the "Law on Joint Ventures Using Chinese and Foreign Investment," "The Income Tax Law Concerning Joint Ventures With Chinese and Foreign Investment," "Individual Income Tax Law of the PRC," "The Income Tax Law of PRC Concerning Foreign Enterprises," "Regulations on Special Economic Zones in Guangdong Province," "Regulations on the Exploitation of Offshore Petroleum Resources in Cooperation With Foreign Enterprises," and other laws and regulations. The relevant departments of the State Council have accordingly formed organs for the administration of foreign investments. In absorbing direct foreign investments and obtaining foreign loans, we have already made certain progress and gained initial economic benefits. We have made a fine start in the utilization of foreign funds.

In 3 years from 1979 to the end of 1981, our country signed the following long- and medium-term loan agreements with foreign governments and the world monetary organizations:

(1) An energy loan of \$900 million from Japan Import-Export Bank, to be used on petroleum and coal mining equipment; and an interest-free loan of \$20 million from the Belgian Government to be used for the purchase of power station equipment.

(2) A loan of 106 billion yen (equivalent to approximately \$440 million) according to a signed agreement with the Overseas Cooperation Funds of Japan, to be used for constructing two ports in Qinhuangdao and Shijiusuo and two railways--from Beijing to Qinhuangdao and from Yangzhou to Shijiusuo.

(3) A loan equivalent to \$931 million granted by the International Monetary Fund under special drawing rights to be used for covering our international payment deficits.

(4) A loan of \$200 million from the World Bank for our college educational projects and another loan of \$35 million from the United Nations Agricultural Development Funds. The agreements for these two loans were signed last year, and the funds are available in 1982.

Furthermore, by the end of 1981, the loans obtained by our Bank of China from foreign banks total \$2.27 billion, mainly to be used for purchasing complete sets of equipment.

Some \$340 million were spent on buyer's credit. The deferred payment for imported equipment amounted to \$1.1 billion.

In 1981, the Japanese Government granted under the Japan commodity loan agreement a total of 300 billion yen in aid of the first-phase construction of our Baoshan Iron and Steel Company and the Daqing Petrochemical Industry Plant. This amount includes 130 billion yen from the overseas cooperation funds transferred from the delayed construction of Wuqiangxi hydropower plant and other projects (first installment of 40 billion yen transferred in 1982); 100 billion yen from the Import-Export Bank; and 70 billion yen from the Japanese civilian commercial banks.

By the end of 1981, agreements of direct investments by foreign merchants involving approximately \$3 billion had been signed (the amount already made available was lower than this figure). The agreements were mainly for the following projects:

(1) Our joint prospecting and exploitation of four offshore oilfields in Bohai and the Beibu Gulf in the South Sea with the Japan Petroleum Syndicate and the French Petroleum Company. The foreign investments totaled \$500 million.

(2) A total of 40 enterprises operated under joint ventures with Chinese and foreign investment (foreign investments totaling \$87.48 million). Most of the funds are used on light industry, textile industry, machinery industry, electronic industry, food industry, pharmaceutical industry, agriculture, animal breeding, and the construction of tourist hotels.

(3) A total of 390 projects in the form of joint ventures using Chinese and foreign investment. Foreign investment totaled \$1.8 billion, of which, \$450 million were spent on tourist hotels, and most of the remaining portion on housing and other construction projects, maritime breeding, ocean fishing, and taxi service.

(4) Compensatory trade projects totaling 590. The machinery equipment supplied by foreign merchants totaled approximately \$460 million in value. For the processing of materials and assembling of parts supplied by foreign customers, equipment of approximately \$157 million in value was also

supplied from abroad. The major portion of the grand total of \$6.7 million was used in light industry, textile industry, garment processing and electronic products processing.

As we can see, the orientation of the use of these foreign funds has mostly been consistent with the priorities in our economic readjustment and the requirements of our long-range development. The benefits we have derived from the use of foreign funds may be summarized as follows:

(1) The use of foreign funds as a supplement has enabled us to undertake some important construction projects. For example, the use of Japan's energy loan has increased our capacity of prospecting and extracting oil in the existing oilfields, and enabled our newly completed coal mines to acquire an annual productive capacity of 21 million tons. Again, the ports at Qinhuangdao and Shijiusuo and the Beijing-Qinhuangdao Railway and the Yangzhou-Shijiusuo Railway, all built with the use of Japan's overseas cooperation funds, can increase the coal transport capacity in Shanxi and Shandong by 35 million tons in 1985.

(2) The use of foreign funds in combination with our economic readjustment has reactivated some suspended projects. For example, with the Japan commodity loan, the projects for the Daqing Petrochemical Industry Plant and for the first-phase engineering of the Baoshan Iron and Steel Company, both of which had been for some time put off for lack of funds, were reactivated. Also, thanks to the cooperation between the China International Trust and Investment Corporation and the Ministry of Textile Industry in absorbing foreign funds, the project of Yizheng Chemical Fiber Plant in Jiangsu, originally planned to be put off, was continued.

(3) These funds have helped us to cover our international payment deficits and thus reduced our burden in interest payments. Since 1979, we have had fairly large international payment deficits because of the heavy outlays in 1978 for the purchase of complete sets of equipment. Through the Bank of China, we had to borrow from foreign commercial banks to make up for these deficits. In 1981, we borrowed from the International Monetary Funds \$931 million to repay some of our high-interest commercial loans. The reduction in their proportion in our total foreign debts has helped to reduce the state's financial burden by cutting down the payment of high interests.

(4) These funds have helped to step up the exploitation of our petroleum resources. In 1980-1981, we cooperated with 48 foreign petroleum companies in surveying our oil deposits along the coast. The foreign companies invested \$240 million, and in slightly more than 1 year, we carried out geophysical prospecting within the territorial waters of 420,000 square kilometers, completed 110,000 kilometers of seismic observation lines, and discovered 474 promising oil deposit structures. We also obtained detailed prospecting data and a resource appraisal report which will prepare the way for us to conduct further planned prospecting and the exploitation of offshore oilfields. In addition, our prospecting and exploitation of offshore oilfields in Bohai and Beibu Gulf in South Sea with the cooperation of Japanese and French petroleum

companies are also proceeding smoothly. In 1981, we discovered three high-yield oil and gas test pits, and their commercial extraction is expected to be carried out in the next few years.

(5) These funds help promote technical transformation for the enterprises and raise their technical and management levels.

In the past 3 years, the coastal provinces and cities, such as Shanghai, Beijing, Tianjin, Guangdong, Liaoning and Jiangsu have utilized foreign funds to import technology and some key equipment and to help some small and medium-size enterprises raise their technical level, improve their business management, increase their varieties, improve the quality of products and expand their exports, all with fairly good results. In the past 3 years, Shanghai carried out 113 small and medium-size compensatory trade projects and imported more than \$33 million worth of equipment. When these projects are completed, it will be able to export \$130 million worth of goods annually in the redemption of loans. By 1981, more than \$10 million had been repaid. In compensatory trade throughout the country, nearly \$100 million worth of goods have been exported in payment for the purchase of equipment. In the same 3 years, we earned \$330 million from the processing of materials and assembling of parts supplied by foreign customers, and provided jobs to 300,000 people. In Shanghai, foreign funds have been utilized in the past 3 years to import technology in collaboration with the technical transformation for old enterprises. The advanced technology soon yielded remarkable economic results. Some enterprises as joint ventures using Chinese and foreign capital have helped raise the technical level of whole trades. The Sino-French Grape Winery of Tianjin, for example, imported from France the technology and equipment for cool fermentation which served as an impetus to technical innovation in brewing.

Because of our inexperience in the use of foreign funds, we have also had some problems and shortcomings mainly for the following reasons: The advance work for some projects undertaken through foreign loans has not been carried out properly. Also, because the planning was not elaborate enough, we had to make changes in the process. This slowed down the progress of work, and some projects even came to a halt half way, with the result the borrowed money could not be properly spent. Some enterprises in the form of joint ventures had to rely indefinitely on imported accessories and spare parts, which cost quite a lot of foreign exchange. In some contracts for the transfer of imported technology, there have been some unreasonable clauses calling for the payment of fairly high prices on our part. In compensatory trade and in the processing of imported materials, there have also been some ambiguous provisions which give rise to problems in the fulfillment of contracts resulting in our loss. The foreign merchants also feel that in their negotiations with us over cooperation, there is too much talking which consumes a lot of time and yields little result; that the procedures are complex and the efficiency is low because of the examinations and approvals required at many levels; and that there are also many problems in business management, the quality of products and the time of delivery. In dealing with these problems, we should conscientiously sum up our experiences and draw our lessons in order to do better in future.

## The Necessity of Foreign Fund Utilization and the Prospects of Development

In carrying out the four modernizations program, we should continue to implement the principle of relying mainly on our own efforts while regarding foreign assistance as subsidiary. In other words, the construction funds should mainly come from the accumulation funds of our own country; the technology and equipment should mainly come from our own research and manufacture; and the skilled personnel should be trained by ourselves. However, we must be aware that in view of our present foundation, it would be impossible to meet the requirements of modernization by purely relying on our own accumulation funds, our technical force, our management experiences and our capacity of manufacturing machinery equipment. In a country under certain conditions of the relations of production, the size of investments and the speed of technical progress are important factors in the increase in production and the rate of economic growth. We are now facing many arduous tasks during the economic readjustment, such as the strengthening of the weak links in energy and transportation, the urgently needed renovation and transformation of the outdated technical equipment of many industry and transport enterprises; and the need to catch up in the newly emerging industries and in the production of goods in short supply. On the basis of self-reliance, it is necessary for us to absorb foreign funds and to import advanced technology in order to quickly exploit our rich oil, coal and hydropower resources and to lay a firm foundation for the supply of energy in the late 1980's and the 1990's. It is also necessary for us to utilize foreign funds to change the backwardness in our ports, railways and telecommunications facilities to meet the requirements of developing our national economy and foreign trade. At the same time, we should speed up the technical transformation for the old enterprises and help them gain better economic results. From this, we can see that the utilization of foreign funds and importation of technology are the objective needs for speeding up our modernization.

It is possible for us to absorb foreign funds because of our rich natural resources, our large market, our political stability and the promising future for economic development. We have very little foreign debts, a good reputation, and a great capacity to repay debts. Therefore, we are quite qualified to make use of the surplus funds in the western countries. With our positions in the World Bank and the International Monetary Funds restored, we are now eligible for loans from these two international financial organizations. We may also be able to obtain certain preferential treatment in the way of long- and medium-term low-interest loans from the governments of such friendly countries as Japan, Kuwait, Italy, Denmark, Sweden and Canada. There are even more sources of export credit and commercial loans. As long as our construction projects are dependable and capable of meeting their loan obligations, it will not be difficult at all to raise funds in the international financial market through bilateral loans between the Bank of China and the foreign banks, through direct loans between the enterprises and the banks, or by floating bonds.

In the past 2 or 3 years, through joint-venture enterprises using Chinese and foreign investment, cooperative business and exploitation, compensatory trade, processing imported materials, assembling parts, leasing and many other forms,

we have opened more avenues and are improving the environments for absorbing foreign funds and attracting direct foreign investments. We have also formulated and promulgated certain laws and regulations concerning the use of foreign funds and have signed, and will continue to sign more, bilateral agreements with the countries concerned on the mutual protection of investments and tax remissions. In April 1982, the standing committee of the 5th National People's Congress, in its 23d session proclaimed and invited discussions by people throughout the country on the "Draft of the Revised Constitution of the People's Republic of China" and solemnly announced our country's policy on absorbing foreign investments. Article 12 of the Draft of the Constitution reads: "The People's Republic of China permits foreign enterprises, other foreign economic organizations or foreign individuals to invest in China or to undertake various forms of economic cooperation with Chinese enterprises or other Chinese economic organizations; all such investments or joint undertakings in China must accord with provisions of the laws of the People's Republic of China. All foreign enterprises and other foreign economic organizations in China, as well as joint ventures with Chinese and foreign investment located in China, must abide by the laws of the People's Republic of China. Their lawful rights and interests are protected by laws of the People's Republic of China." It can be anticipated that after the formal adoption of Draft of Constitution, the forthcoming announcements of the "Detailed Regulations for the Implementation of the Law Concerning Joint Ventures With Chinese and Foreign Investment" and the "Contract Law Concerning Foreign Economic Relations" will greatly inspire foreign investors and strengthen their confidence in investing in China, and eliminate all unnecessary worries.

The various regions in our country, especially the coastal provinces and cities, are now vigorously improving their energy supply and their infrastructure in the ports, railways, navigation routes, posts and telecommunications, urban public facilities and so forth; and simplifying the procedures of examination and approval for foreign investments in order to raise work efficiency. All these measures will continue to improve the conditions for attracting foreign investments.

After a long preparation, the China National Offshore Oil Corporation has since 1 April 1982 been accepting bids from foreign oil companies for the prospecting and exploitation of China's offshore oil resources. This is an important event in our use of foreign funds on the large-scale joint exploitation of offshore oil. It is anticipated that all the contracts with the legitimate bidders will be signed within 1982, to be soon followed by prospecting. In the next several years, an investment of approximately \$3 billion will be required for prospecting and exploitation. The use of these foreign funds will not only lay a foundation for the exploitation of our offshore oil resources, but also give an impetus to the machinery industry serving the drilling and extraction as well as the building of logistic bases.

We are now working out the Sixth 5-Year-Plan in which the plan for foreign fund utilization will figure prominently. The general scope of main objectives of the utilization will be determined on the basis of our needs and capability. Our policy in the use of foreign funds is to be both active and steady.

According to the overall strategy of using foreign funds, we can afford to be bold and active; however, with regard to the scope of investment and the steps of implementation, we must act cautiously and steadily according to the supportive capacity of the country in the way of funds and material supply, as well as the capacity of assimilation, in order to insure dependable economic results, to help in the readjustment and development of the national economy and to bring about a progressive spiral and steady growth of the national economy.

#### The Problems Requiring Urgent Solution in the Utilization of Foreign Funds

We have had a good start and gained some preliminary experience in the use of foreign funds. However, this is after all an innovation of which we do not have adequate knowledge or experience. That is why we have many problems in ideology as well as practical work. What should deserve our serious attention now is as follows:

First, we have to strengthen our understanding of the use of foreign funds.

In the use of foreign funds, some units, on the one hand, now have misgivings, fearing that violation of the policy of self-reliance will hinder the development of national industry and that they may be swindled in handling foreign funds. Therefore, they are timid and hesitant in their work, thus hindering the smooth progress of foreign fund utilization. On the other hand, some units have acted impulsively in the hope for immediate success. Instead of conducting any advance investigations and study concerning the projects they had in mind, they hurriedly began negotiations with foreign merchants, and these negotiations may become so protracted that the projects have to be changed time and again. Sometimes, even after the signing of contracts, they may find it difficult to conform to the construction plan, and the manpower and financial resources are spent fruitlessly. There are also a very small number of comrades who have become corroded or have been swindled in their contacts with foreign merchants, thus jeopardizing the state's interests. In view of these problems, we should strengthen our ideological guidance and education in the use of foreign funds according to the party Central Committee's correct open-door policy. We should be not only active and bold, but also steady and cautious in the utilization of foreign funds; and should constantly sum up our experiences, enhance our understanding, and coordinate the efforts in various fields.

Second, we have to stress the need for overall balance and comprehensive planning in the use of foreign funds, determine the orientation of such use in a rational way, and carefully carry out the advanced preparatory work and feasibility study. In the past, instead of looking for foreign funds in accordance with the requirements of the specific projects, we planned our projects only after the availability of foreign funds. Because of the lack of advance preparatory work, such an investigation and survey and the great haste in starting work, many changes have to be made while the work is in progress. Sometimes, even though a project has been determined, there is no assurance that the supportive projects can keep pace with it. There will be no proper way to spend the money and the economic results will be adversely affected. To change such a passive situation, while working out future plans, the use of foreign funds



should be included in order that an overall balance can be achieved and the orientation and priorities in the use of foreign funds can be rationally arranged. For the important construction projects requiring and eligible for the use of foreign funds, some funds should be allocated in advance so that investigation and survey and feasibility study can be conducted in advance and construction plans based on technical and economic confirmations can be formulated as preconditions for the absorption and rational utilization of foreign funds.

In the course of working out the overall balance and planning, we must carefully attend to the following three combinations: 1) the combination of the absorption of foreign funds with the raising of domestic supportive funds; 2) the combination of the importing of technology and key equipment with the development of machinery production at home; and 3) the combination of the absorption of foreign funds and importing technology with the plans for technical transformation in different trades. Provided these three combinations are well carried out, we will be able to bring into play the positive role of foreign funds and the imported technology, guard against rash action or duplicate imports and protect and promote our national industry.

Third, in the utilization of foreign funds, we must uphold the principle of equality and mutual benefits. On the one hand, we must demand that the foreign merchants respect our national sovereignty and abide by our national law, and prevent them from taking unfair advantage of their funds and technology in plundering our resources, monopolizing our market and amassing windfall profits. On the other hand, we must protect their legitimate interests, adopt appropriately flexible policies by allowing them to make reasonable gains, and grant some special and preferential treatment when we are in urgent need of foreign funds for some selective trade or regions. In importing advanced technology, we should observe the signed contracts and legally protect the patent right and technical secrets transferred to us.

Fourth, we have to open more avenues for absorbing foreign funds, so that the utilization can take diverse and flexible forms. There are many different channels for the absorption of foreign funds, and the classification of countries and currencies is very complex. We must study the laws governing changes in the international monetary system and choose the best possible avenue.

Several years ago, when we were beginning to absorb foreign funds, we did not obtain many official loans from governments or the International Monetary Fund. Because of the large scale importation of complete sets of equipment, the majority of our loans were from commercial sources. This, of course, was only a temporary expedient. To prolong the repayment period and to reduce our interest burden, we should in future strive for long- and medium-term loans with low and medium interest rates from government sources or the International Monetary Fund, and use these loans to finance the large infrastructural projects, such as energy and transportation, which require long construction periods and yield slow and low investment returns. For those projects requiring less investment and short turnover periods but yielding high profits and capable of increasing our foreign exchange earnings through exports and of repaying

the loans, we can use the ordinary commercial loans. However, the proportion of these loans in the total volume of our national debt should be lowered as much as possible.

The purpose of using foreign funds in our country is not only to fill the gaps caused by our shortage of funds, but also, more important still, to import advanced technology and experiences in business management to transform the existing enterprises, to promote the modernization of their technology and management, to increase their competitive power on the international market, and to expand their exports in order that they can earn more foreign exchange to repay the debts incurred in the use of foreign funds. In this connection, attracting direct investments from foreign entrepreneurs and linking our interests with those of the investors through joint ventures, business cooperation, cooperation in exploitation, compensatory trade, processing imported materials and assembling imported parts will help in the assimilation and application of the imported technology, the improvement of operation and management and the increase in the products' competitive power. In future, therefore, we should make greater efforts to attract direct investments from foreign countries, appropriately expand the sphere and scope of joint ventures and cooperation in exploitation, sum up our experience in good time, cultivate exemplary units and usher in a new phase in the work of attracting direct investments from foreign enterprises.

Fifth, we should gradually set up and improve a management system for the absorption and effective use of foreign funds, establish efficient organs for their control, formulate and perfect the laws, decrees and statutes concerning their use, and form a system of economic responsibility which combines the rights, responsibilities and interests for the sake of better economic results.

In many respects, our present system of economic management is not suitable for the requirements of foreign fund utilization. In order that the foreign funds can be used with good economic results, we must, first of all, improve the present state of decentralized administration at all levels from the central to the local authorities in coordination with the restructuring of our economic system. We should on the one hand practice all-round planning, centralized administration, division of work and cooperation and unified action in dealing with foreign countries, and, on the other hand, bring into play the enthusiasm and initiative of various departments and localities. The number of levels for examination and approval should be reduced, the procedures should be simplified and less time-consuming, and the efficiency should be raised. Second, the units using foreign funds should be changed from administrative organs into enterprises, and based on different conditions in different projects, the system of "borrowing and repaying exclusively by the state" should be gradually changed into "exclusive borrowing by the state and repaying by the using units" or "borrowing and repaying by the using units." We should also set up a system of combination of "rights, responsibilities and interests" and "borrowing, using and repaying," so as to develop the initiative of the borrowing units in business administration and economic accounting. The finance, taxation, customers and banking departments should start out with encouraging the absorption of foreign funds and supporting the projects for which foreign funds are used

so as to speed up their construction and bring about good economic results, and then adopt certain forceful policies and measures to help in the study and solution of the related problems.

Sixth, we should make great efforts to train a more efficient contingent of cadres for using foreign funds. Whether these funds can be used to good advantage and whether the enterprises using them can be well run are in a large measure decided by the quality of the cadres engaging in this work. At present, the need for professional cadres who know and can provide leadership over the work of law, finance and accounting, is most keenly felt. To strengthen these weak links, the leading departments concerned should, when assigning cadres to take charge of projects financed by foreign funds, carefully select those fine backbone elements who have a firm political stand and an orthodox work style, and are young, healthy and devoted to their work and the study of technology. After certain training, they can work, study and improve themselves on their jobs. At the same time, we should run some specialized classes and choose a number of young talents out of the personnel of government offices and enterprises and the university graduates. After some specialized training, they should be tempered at their work posts where they will continue to be tempered and selected again. Then gradually, we will be able to form a work force which is both red and expert for handling foreign economic relations.

We are now in a new situation of gradually expanding the scope of foreign funds and accelerating our modernization. We must take advantage of the favorable international conditions in order to absorb foreign funds actively and steadily and to use these funds well. Among the three links of borrowing, using and repaying foreign funds, we should have a firm grip on "using" and realistically perform our work in various fields centering around the crucial task of improving the economic results, in order to give full play to the positive role of foreign funds in our modernization program.

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## CHINA'S AGRICULTURE IN 1981

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[Article by Ai Yunhang [5337 0061 5300], State Agriculture Commission Policy  
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[Text] Agricultural Production and Peasant Life in 1981

During 1981 agricultural production in China was carried out under extremely disadvantageous conditions. Many parts of the country experienced drought and flood disasters. The spring drought in north China and the summer drought in southwestern China, the flooding and waterlogging in northwestern China and on the Sanjiang Plain in northeastern China, and the protracted rainy and overcast weather in south China during the fall were such as have been rare in recent years. The area of the country affected by disaster during 1981 totaled 530 million mu of which 267 million mu was completely disaster stricken in the most serious disaster during the past several years. Nevertheless, under the party's leadership, the far-flung rural villages of the country continued to purge the influences of "leftist" ideology, further readjust production relationships, and institute various forms of production responsibility systems. Peasant zeal for production reached unprecedented heights with the result that the material and technical conditions created over a period of many years were put to greater use, national disasters were conquered and all-around bumper harvests in agriculture won, and rural villages enjoyed political stability and economic prosperity. National grain output approached the all-time high of 1979; cotton output showed new breakthroughs in a continuation of last year's all-time high records; oil-bearing crops saw another bumper harvest to cap consecutive years of greatly increased output; tremendous increases occurred in outputs of sugar, tea, tobacco, hemp, and fruits; forestry, animal husbandry, and fisheries scored new successes; commune and brigade enterprises continued development; both economic diversification and household sideline occupations developed very quickly; and commune member income increased markedly.

In 1981 grain output totaled 650.04 billion jin, 900 million jin or 1.4 percent more than in 1980. The 14 of the country's 29 provinces, municipalities, and autonomous regions that had increased output were Hebei, Shanxi, Nei Monggol, Jilin, Jiangsu, Anhui, Fujian, Jiangxi, Henan, Hubei, Hunan, Sichuan, Yunnan, and Ningxia. The 15 with outputs less than last year were Beijing, Tianjin,

Liaoning, Heilongjiang, Shanghai, Zhejiang, Shandong, Guangdong, Guangxi, Guizhou, Tibet, Shaanxi, Gansu, Qinghai, and Xinjiang. Those with the highest increase in output were Nei Monggol, Anhui, and Hubei with increases over the previous year of 28.6, 22.9, and 11.1 percent respectively. Tianjin, Qinghai, Heilongjiang, Guizhou, and Gansu, where disasters were fairly severe, had output drops of 22.5, 16.2, 14.5, 12.4, and 11.7 percent respectively.

In 1981 cotton output totaled 59.36 million dan, 5.22 million dan or 10 percent more than in the great bumper harvest year of 1980. Shandong Province, in a continuation of last year's exceptionally bumper harvest, increased output this year by 2,754,000 dan, an increase of 25.6 percent. In Jiangsu and Xinjiang Provinces, cotton output surpassed the all-time records. In 1981, Jiangsu Province's cotton output was 11,269,000 dan, 4.8 percent more than in 1980. In Anhui and Hubei Provinces cotton output was better than in 1980 as a result of continuously rainy and overcast weather. In Shanghai, Zhejiang, Hunan, and Sichuan Provinces, outputs were not as high as in 1980 because of reductions in the cotton acreage and natural disasters including typhoons and floods.

A great bumper harvest in 1981 capped 3 consecutive years of greatly increased output of oil-bearing crops. Output totaled 204,104,000 dan, a 50,293,000 dan or 32.7 percent increase over 1980. Among the three major oil-bearing crops, output of rapeseed and sesame seed increased by 70.5 and 97.1 percent respectively.

In 1981, sugar crop output totaled 720.57 million dan, which was 138.32 million dan or 23.8 percent more than in 1980. Tobacco output was 29,945,000 dan, a 13,049,000 dan increase over 1980 for a 77.2 percent increase. Tea output was 6.86 million dan, 780,000 dan or 13 percent more than in 1980.

In 1981, output of various kinds of hemp [jute and ambari hemp] totaled 31,529,000 dan, an increase by about 2.81 million dan or 9.8 percent over 1980.

Output of silkworm cocoons in 1981 was 6,221,000 dan, a 294,000 dan or 4.5 percent decline from 1980. This included a mulberry silkworm output totaling 5,033,000 dan, which was 37,000 dan or 0.6 percent more than in 1980, and a tussah silkworm cocoon output totaling 1,186,000 dan, a 327,000 dan or 21.2 percent decline from 1980.

In 1981, fruit output totaled 156,017,000 dan, 20,166,000 dan or 14.8 percent more than in 1980.

In 1981, the area afforested nationally amounted to 61.65 million mu, 9.7 percent less than in 1980; however, quality of afforestation came in for attention, and there was a marked increase in the survival rate as compared with previously.

Livestock industry production was in fairly good shape in 1981. Except for a slight decline in output of live hogs, growth occurred in output of large livestock animals, sheep and goats, poultry and eggs.

Ever since the 3d Plenary Session [of the 11th Party Central Committee] hog production has developed fairly fast for a very rapid reversal of the short supply situation for pork. During the past year, however, in some places commodity flow channels have become clogged causing difficulties for hog sales. In some places, following institution of production responsibility systems, animal feed grain was reduced and the area for the growing of animal fodder curtailed, or else workpoint remuneration in exchange for hog manure was eliminated. In some production teams that instituted the contracting of production to individual households or the contracting of sole responsibility for work task completion to individual households, the former collective encouragements and rewards to raise hogs were not applied to individual households at the same time. This adversely affected mass enthusiasm for hog raising, and was one of the main reasons for the drop in the number of live hogs. During 1981 both the number of hogs in inventory and the number of hogs removed from inventory declined. As of the end of December 1981 hogs in inventory numbered 293,702,000, an 11,729,000 head drop from the same period in 1980, a drop of 3.8 percent. The number of hogs removed from inventory for the whole year numbered 194,947,000, 3.66 million or 1.8 percent fewer than during 1980.

As of the end of December 1981 large livestock animals in inventory numbered 97,641,000, a 2,395,000 or 2.5 percent increase over the same period in 1980. Sheep and goats in inventory numbered 187.73 million, 419,000 or 0.2 percent more than during the same period in 1980. Sheep and goats removed from inventory during the year numbered 44,814,000, 2,395,000 or 5.6 percent more than in 1980.

Output of aquatic products totaled 4,605,000 tons, 2.4 percent more than in 1980. This included a 10.7 percent increase in output of freshwater aquatic products, and a slight decline by 0.8 percent in output of marine aquatic products.

As a result of readjustment, the number of commune and brigade enterprises fell; however, earnings increased over 1980. In 1981 there were 1,338,000 commune and brigade enterprises throughout the country, 87,000 fewer than in 1980 for a reduction by 6.1 percent. Gross income of commune and brigade enterprises totaled 67.04 billion yuan, 7.43 billion yuan more than in 1980. This was a 12.5 percent increase.

Thanks to the all-around bumper harvest in agriculture, purchases of grain, oil-bearing crops, and other agricultural sideline products made the year a fairly good one. In 1981 national state grain purchase plans were overfulfilled. In 1981, state grain purchases for the country as a whole totaled 136.9 billion jin, 14.3 billion jin more than in 1980. In 1981, national edible oil purchase plans were overfulfilled, both total output and commodity output of edible oil surpassing the all-time highs. Total output of edible oil (all kinds of oil having been converted) for the country as a whole reached 6.7 billion jin, 1.2 billion jin or 21.8 percent more than in 1980 for an all-time record. In 1981, state edible oil procurement plans were fulfilled half a month earlier than in 1980. As of 25 December 1981, edible oil purchased and stored nationally totaled more than 3.7 billion jin in 101.5 percent fulfillment of 1981 purchase plans, more than 900 million jin

purchased than in 1980. This was the maximum year for the amount of edible oil purchased in China. Gross value of agricultural sideline products procured in addition to grain and oil was 23.54 billion yuan, 7 percent more than in 1980. As of the end of December 1981, 57.44 million dan of cotton had been purchased in the country, more than 5 million dan more than in 1980, exceeding plan by 11 percent. Purchases of jute and ambari hemp came to 12.24 million dan in 30 percent overfulfillment of plan. Flue-cured tobacco purchases amounted to more than 25.18 million dan in 36 percent overfulfillment of plan. Light industrial raw materials including ramie, sun-cured tobacco, wool, sheepskins, and silkworm cocoons all overfulfilled purchase plans. Tea purchases amounted to 6.47 million dan.

The fine situation in agricultural production was also reflected in rural market trade. The more than 39,000 rural markets in the country were extremely lively; amounts of agricultural sideline products coming into market increased tremendously and varieties became ever more numerous. In 1981, rural market trade transactions totaled 29 billion yuan, 23.2 percent more than in 1980. Rural market trade prices rose, the rise being 8.9 percent in December 1981 as compared with the same period in 1980. The prices of grain and oil were stable with a slight decline.

Agriculture's bumper harvest, development of economic diversification and commune member sideline occupations, and the liveliness of the markets brought about marked increase in peasant income and substantial improvement in their lives. A survey of commune member family income and expenditures shows average per capita net income to have been 160 yuan in 1979 and 191 yuan in 1980. Initial forecasts place it at around 220 yuan in 1981, a more than 80 yuan increase over the 134 yuan of 1978 for a more than 17 percent average incremental increase over a 3-year period. Among the total number of commune member households surveyed in the country, the ratio of hardship households having net income averaging less than 100 yuan per capita fell from 33 percent in 1978 to less than 10 percent in 1981. Rural purchasing power rose markedly. In 1981 commodity retail sales in rural villages totaled 132.4 billion yuan, 11.3 percent more than in 1980. In 1981, purchases of consumer goods by rural residents totaled 95.05 billion yuan, 90.2 percent more than in 1978. Purchases of consumer goods by rural residents averaged 117.40 yuan per capita, up 53.90 yuan from 1978 in an 84.9 percent increase. Sales of clothing and items for daily use continued to increase in rural villages, and demand for high quality goods such as television sets, radios, sewing machines, bicycles, wristwatches, washing machines, and electric fans also increased rapidly. Peasants built more and more new houses, the amount of new housing covering an area of more than 600 million square meters, 100 million square meters more than last year for a 20-percent increase.

All-around growth of the rural economy occasioned an enlivening of rural financial enterprises. In 1981 the country's agricultural banks and credit cooperatives issued agricultural loans of various kinds totaling 30 billion yuan, or 12 percent more than last year, to basic accounting units in rural communes, to commune and brigade enterprises, and to individual commune members. The amount of rural savings also increased tremendously. As of the end of 1981 savings account balances in agricultural banks and credit cooperatives amounted

to 21.169 billion yuan, 6.246 billion or 41.9 percent more than at the end of 1980. This averages out at somewhat more than 25 yuan per capita of the rural population, 7 yuan more than in 1980.

#### Restructuring and Readjustment of Agriculture in 1981

During 1981 much readjustment and restructuring of agriculture occurred, principally in the following fields:

1. Continued Establishment and Perfection of Agricultural Production Responsibility Systems. As a result of thoroughgoing implementation of the spirit of several notices issued by the CPC Central Committee on further strengthening and perfection of agricultural production responsibility systems, the building of agricultural production responsibility systems developed very rapidly throughout the country, and progress was smooth. As of the end of 1981, more than 90 percent of the country's rural production teams had set up different forms of responsibility systems. Practice has shown that establishment of diverse forms of production responsibility systems has further stirred peasant enthusiasm for production. It has promoted development of the rural economy, and in many places marked changes have taken place. For example, in Chuxian Prefecture, Anhui Province, following institution of responsibility systems linked to output in 1979, a fine situation occurred of year after year increases in output and earnings. A comparison of 1981 with 1978, before responsibility systems linked to output, shows a 76 percent increase in grain output, a 289 percent increase in oil-bearing crops, a 23.1 percent increase in cotton output, and a 37 percent increase in output of flue-cured tobacco. Commune member income increased tremendously and life improved substantially. In 1981 the prefecture's distributions from the collective averaged 207 yuan per capita, 61.7 percent more than in 1980. Net income to commune members in the prefecture from household sideline occupations averaged 73 yuan per capita, 32.7 percent more than in 1980. Taken together, the two items produced an average 280 yuan per capita in income, 53 percent more than in 1980. Substantial improvement also took place in commune member housing, clothing, food, and items used in daily life. During the past 3 years new tile roof houses containing more than 176,000 rooms and covering more than 2.8 million square meters were built. This included 98,625 rooms covering more than 1.5 million square meters built in 1981, and preparations are currently underway for an additional more than 40,000 households. Commune member purchases of high grade goods such as television sets, radios, wristwatches, sewing machines, bicycles, and electric fans have increased more and more. During the past 3 years, commune members also used their funds to buy more than 57,500 plow oxen, 4,670 small tractors (including 2,700 purchased in 1981), 230 large and medium-size tractors, and 3,375 processing machines of various kinds, creating conditions for further development of production. Before institution of responsibility systems linked to output, the prefecture's grain sales to the state averaged less than 100 jin per capita, and the commodity rate for grain was less than 15 percent. In 1981 the prefecture's grain sales to the state averaged 420 jin per capita, or an average of 1 ton of grain per peasant household. The commodity rate for grain was greater than 30 percent. Prefecture sales of fats and oils to the state averaged 23.6 jin per capita for a 7.3 fold over-fulfillment of quota and a commodity rate of 73.5 percent. Sales to the state



of cotton, flue-cured tobacco, live hogs, poultry, and fresh eggs overfulfilled quotas.

The various forms of production responsibility systems currently in practice in various parts of the country may be divided into those linked to output and those not linked to output. Responsibility systems not linked to output are principally those that follow the former method of contracting jobs to be done in a certain period of time for a fixed amount of remuneration. Statistics as of the end of October 1981 show approximately 16.5 percent of the country's basic accounting units practicing this method. The other kind that is linked to output is used in about 81.3 percent of all cases, and there are five forms of this kind as follows:

One is specialized contracting with calculation of compensation linked to output. This is characterized by the contracting of all production tasks that can be contracted to specialized corps, specialized teams, specialized households, or specialized workers on the basis of the production requirements of agriculture, forestry, animal husbandry, sideline occupations, fisheries, industry, and business under the centralized leadership and centralized administration of production teams or production brigades. Everything that lends itself to centralization is centralized, and everything that lends itself to decentralization is decentralized, with calculation of compensation being linked to output. Currently 5.9 percent of the country's basic accounting units practice this form of responsibility system.

Second is centralized administration, output linked to teams. This form is characterized by production teams doing centralized accounting and centralized distribution, contracting being done with work teams for fixed output quotas, a fixed amount of manpower, a fixed amount of land, a fixed number of plow oxen, and a fixed amount of farm implements, manpower, output, and investment all being set, with bonuses given for overfulfillment and penalties for underfulfillment. This method is used in about 10.8 percent of cases.

Third is contracting of fixed output quotas to individual households. This is characterized by the contracting of most or all collectively owned land to individual households under production team centralized leadership, centralized planning, centralized accounting, and centralized distribution. Basically each household is responsible for carrying out production, production teams setting its output, investment, and labor distribution for each household, bonuses provided for overfulfillment and penalties levied for underfulfillment. This form is used in about 7.1 percent of all cases.

Fourth is the contracting of sole responsibility for task completion to individual households. This is a management method that uses contracts as the form for distributions to the country, collectives, and commune members. In general, while maintaining public ownership of land and other basic means of production, maintaining centralized farming plans, maintaining the care and use of major farmland capital construction and water conservancy construction, the collective centrally administering them, production teams contract cultivated land to individual households for farming, and assign plow oxen and farm implements to individual households for their care and use in the institution of a production responsibility system of farming by individual households. Investment

in production is provided by commune members themselves, and after products have been distributed to fulfill state quotas and deducted for collective withholdings, all that remains belongs to the contracting commune member. The distinguishing feature of this method is as commune members say, "rendering to the country, withholding sufficient for the collective, the remainder being entirely one's own." This form is fairly widespread, being used in about 38 percent of cases.

Fifth is centralized administration, production being linked to individual workers.

This method is characterized by adherence to a foundation of production team centralized administration, centralized accounting, centralized distribution, and cooperation in the division of labor, land being contracted in accordance with the workforces available to farm it. Some operations are centralized and some decentralized in this method, and calculation of compensation is linked to output, with bonuses for overfulfillment and penalties for underfulfillment. This form is used in about 15.8 percent of all cases.

The foregoing forms of responsibility systems play a role in varying degrees in overcoming egalitarianism, spurring commune member enthusiasm for work, and in giving impetus to production. Practice in most cases has shown that output increases more when there is a linkage to output versus no linkage to output, and that output increases more from linking output to individual workers and individual households or by contracting sole responsibility for work task completion to individual households than from any other form. Nevertheless, one cannot act with arbitrary uniformity; it is necessary to proceed from realities, to persevere in the adaptation of general methods to local situations, to provide tailored guidance, and to institute diverse forms of responsibility systems. So long as it increases output and earnings, shows concurrent concern for the interests of the country, collectives, and commune members, and is desired by the masses, any form may be allowed and steadily perfected and improved through practice.

2. Active Promotion of Scientific Techniques With Vigorous Development of Technical Training. Development of agriculture requires reliance on policies and reliance on science. This guiding idea enjoys great popular support and has become a tremendous force for giving impetus to the all-around development of agriculture. A great amount of work was done during 1981 in the promotion of science and technology and in technical training, most important of which was the following:

1. Adoption of various forms for the spread of scientific and technical knowledge and guidance of peasants in scientific farming. With the establishment and growth of agricultural production responsibility systems, the demands of the broad masses of peasants to study science and use science have become more pressing. In order to satisfy these demands, throughout the country there has been a general operation of peasant after-hours technical schools and short courses in farming techniques for the training of peasant technical mainstay cadres. The Central Agricultural Broadcast Schools operated jointly by nine departments of the central government have been even more welcome by the

far-flung agricultural staff and workers as well as peasants throughout the country. Today there are about 450,000 students. Numerous places have used methods such as "technical going to market," radio lessons, farm techniques advisory services, and photographic exhibitions to conduct technical education and to spread scientific and technical knowledge. An example is the Tianjin Municipal Ji County Science Society which operated scientific and technical going to market meetings in the county seat on market days. It used things such as exhibitions and explanations to transmit scientific agricultural information reaching an audience of more than 15,000 peasants, staff and workers, cadres, and soldiers of the Liberation Army. It explained more than 1,000 different problems, sold more than 4,800 pieces of scientific and technical materials, and signed 15 technical agreements with some units and individuals. In explaining and publicizing scientific knowledge, it concentrated on that which was urgently needed and genuinely effective, and was very much welcomed by the peasants.

2. Active spread and application of the fruits of advanced scientific research. The scientific and technical fruits of successful research done by China's working people and scientific workers has been spread and applied in agricultural production to play an important role in increasing yields. Xian type hybrid rice has been spread over a wide area. In the 6 years from 1976-1981 it has been sown over an accumulated 330 million mu area for increases in yields averaging more than 100 jin per mu or an accumulated increase in paddy output of more than 33 billion jin. "Lumian No 1" superior cotton variety has also been spread rapidly, going from the slightly more than 40 mu of 1976 to more than 10 million mu in 1980. Last year, in Shandong Province alone it spread over more than 8 million mu to play an important role in increased cotton yields, the province's cotton output topping 10 million dan a 2.2 fold increase over 1979. In 1981 "Lumian No 1" superior variety cotton spread through all Shandong Province and a new great bumper harvest of cotton was achieved. Rapeseed is one of China's five major oil-bearing crops, and is an important source of edible vegetable oil. Rapeseed output accounts for more than one-third of total oil-bearing crop output. Since the 1960's, rapeseed production has developed only slowly, and there has been a shortage of edible oil. After 1978, research in this regard was intensified and an early ripening, high yield, and toxic-disease resistant cabbage-type superior variety was bred, which has now been promoted widely. In 1980 alone, the rapeseed growing area expanded almost 10 percent over 1978, but rapeseed output increased 28 percent. In 1980 output totaled 47.67 million dan a 10.31 million dan increase over 1978. This converts to a quantity of oil equivalent to China's total imports of edible oil for the 3-year period 1977 to 1979. In 1981 another bumper crop of rapeseed was harvested, output totaling 81,298,000 dan, a 70.5 percent increase over 1980.

3. Establishment and promotion of agricultural technique responsibility systems. In order to satisfy demands of the broad masses of peasants to study and use science, many places throughout the country established and promoted agriculture technique responsibility systems. After putting this method into effect, agricultural technique departments no longer had to rely solely on administrative methods to promote agricultural techniques. Rather they signed agreements with peasants for the assumption of economic responsibilities,

which greatly aroused the enthusiasm of farm technical personnel. Right now the principal forms of agricultural technique responsibility systems are as follows:

(1) Agricultural technique responsibility system linked to output. The contracting unit provides technical guidance to the producing unit on one or several crops it grows and provides bonuses or metes out penalties linked to output. Both parties to the contract bear clear responsibilities. The contracting unit has to provide technical programs for farming techniques, disease and insect pest prevention and control, and scientific use of fertilizer, and it has to send farm technical personnel to provide guidance and implement programs. Production units have to carry out strictly the technical procedures, provide the manpower and material resources in accordance with agreements, fulfill production tasks at all stages at the specific time, of specific quality, and in specified quantity, and render factual output reports. Technical guidances fees are paid as stipulated following increases in yields. Should the contracting unit's technical guidance not work causing a fall in yields, it has to indemnify certain losses.

(2) Agricultural technical service agreement system. The contracting unit provides technical guidance for one or several crops to the production unit, and following increases in yields, the production units pays a certain service fee.

(3) Special technique contract agreement system. The contracting unit does specialized contracting for only one or several tasks that are highly technical in nature or for which the demand is high such as disease and insect pest prevention and control, hot house culturing of paddy seedlings, hybrid rice seed production, and domestic livestock and fowl raising epidemic disease prevention and control for which it receives a fixed service fee and a bonus or penalty depending on quality of service.

(4) Farm technical cadre personal responsibility system. A system of specific personnel, specific tasks, specific requirements and specific rewards and penalties is instituted for agricultural technical cadres in a contingent, and when specific output norms have been fulfilled, summaries of experiences of value for promotion are written, bonuses given for achievements, and penalties meted out is deemed appropriate for failure to fulfill tasks.

Facts have shown that in all communes and brigades that have instituted agricultural technique responsibility systems, results in increased yields have been fairly remarkable. In Sichuan Province, for example, where the Neijiang Prefecture Seed Company contracted with four communes, increases in outputs of paddy rice, corn, and sweet potatoes totaled 4.71 million jin. Paddy rice yields increased by an average 132 jin per mu, corn yields by 282 jin per mu, and sweet potatoes by 45 jin per mu.

In some places that have instituted the contracting of output quotas for sole responsibility for task completion to individual households, among commune members there have developed farm science households, and societies for the popularization of agricultural science have been established in communes.

These have played an important role in strengthening the system for promotion of agricultural techniques and have advanced increases in agricultural production. In some places in Zhejiang Province that have instituted "double contracting" [contracting of production quotas and sole responsibility for task completion to households], each production brigade designated one or two households as farm science households. Commune farm science stations gave priority to farm science households in supply of superior varieties, in farm technique materials, and in training in new techniques. Farm science households conducted experimental demonstrations on the fields for which they had contracted and provided guidance to the peasant masses on key measures. Commune societies for the promotion of agricultural science frequently organized farm science households to study scientific and technical knowledge, to study production problems, and to exchange advanced experiences.

4. Vigorous development of technical training work. Technical training work in the agricultural system first began with the training of leadership cadres. Both the central and provincial governments have established more than 260 cadre training bases and have trained more than 20,000 leadership cadres to be in charge of agricultural work above the county level. This is one-third the total number of cadres above the county level. As a result of training, leadership cadres at all levels have a deeper understanding of the importance of relying on science to develop agriculture, which has played a role in "the training of one gives impetus to a large area," and has vigorously promoted development of agricultural training work. Today a new situation has taken place in the country's agricultural situation with the central government, provinces, prefectures, counties, and communes all operating training classes. Shandong Province has set up more than 300 training bases of various kinds for the training of 35,000 cadre above the commune level, 20,000 science and technology personnel, 32,000 agricultural staff and workers, and 2.5 million production team cadres and peasants. Since 1979 Shanxi Province has trained more than 50,000 staff and workers in the province's agricultural system, more than 8,000 of whom are leadership cadres above the commune level, and 13,000 of whom are specialized technical cadres and administration and management cadres. Training has raised the technical level and management level of leadership cadres, scientific and technical personnel, management and administrative personnel and the peasant masses, has produced remarkable results, and has played an important role in achieving bumper harvests for 3 consecutive years.

3. Continued Readjustment of the Structure of Agricultural Production and of Crop Patterns. Since the 3d Plenary Session [of the 11th Party Central Committee] the structure of agricultural production and crop patterns have undergone readjustment on a nationwide scale, growth taking place in both grain production and economic diversification. Despite a more than 100 million mu reduction in the grain growing area between 1979 and 1981, average gross output for the 3 years has increased by about 40 billion jin as compared with 1978. Rapid development has taken place in economic crops such as cotton, oil-bearing crops, sugar crops, and hemp crops urgently needed in the country, and all around efforts in agriculture, forestry, sideline occupations, animal husbandry, and fisheries have reversed the former situation of grain farming only, and remarkable changes have taken place in the structure of agricultural production. The make-up of gross output value of rural basic accounting units

in 1981, as compared with 1978, increased 12 percent for agriculture, 17 percent for forestry, 27 percent for animal husbandry, 40 percent for sideline occupations, and 7 percent for fisheries.

The year 1981 saw further readjustment of the crop acreage that made crop patterns more equitable. Both the cotton growing area in the north and the sugar cane growing area in the south expanded. Looked at in national terms, the grain, hemp, and sugarbeet growing area declined from 1980, and the cotton, oil-bearing crop, sugar cane, and flue-cured tobacco growing area increased over 1980. In 1981 the area sown to grain totaled 1.7 billion mu, 34.64 million mu or 2 percent less than in 1980. Hemp crops occupied 8,865,000 mu, 1,132,000 or 11.3 percent less than in 1980. Sugarbeets occupied 6,537,000 mu, 104,000 or 1.5 percent less than in 1980. The 77,776,000 mu cotton growing area of 1981 was the highest for the past 20 years and a 3,972,000 mu or 5.4 percent expansion over 1980. Oil-bearing crops occupied 137,015,000 mu, which was 18,095,000 mu or 15.2 percent more than in 1980. The 8,269,000 mu sugar cane growing area expanded by 1,076,000 mu or 15 percent over 1980. Tobacco's 11,355,000 mu growing area was a 3,675,000 mu or 47.9 percent expansion over 1980.

Many areas of the country obtained fairly good economic results from readjustment of the structure of agricultural production and of crop patterns. For example, the Nei Monggol Autonomous Region put into effect a development program of "taking forestry and livestock raising as the key link in economic diversification," further readjusted the proportions of grain and economic crops grown, appropriately reduced the grain growing area, expanded the sugarbeet and oil-bearing crop area, and returned to forests or pasturage some land not suited to the growing of grain for rather good results. In 1981 the region's grain growing area was 430,000 mu less than in 1980, yet total output increased by more than 2 billion jin for an all-time high. Oil-bearing crops and sugar crops increased output by 44 and 18.8 percent respectively. "Three dependency teams," which 2 years earlier accounted for one-third of all production teams in the region, virtually solved problems of sufficient food and clothing. The region's average per capita income reached 210 yuan in rural areas, 30 yuan more than in 1980.

4. Active Development of Rural Economic Diversification. During the past 3 years, with the righting of "leftist" errors on the agricultural front and implementation of various rural economic policies, a fine situation such as has rarely occurred since founding of the People's Republic has taken place in agricultural production, and rural economic diversification has shown heartening development. Very great changes have taken place in the former tendency to give serious attention only to grain production to the neglect of economic diversification into forestry, livestock raising, sideline occupations, and fisheries. In 1981 gross income for the country's rural basic accounting units amounted to 136.08 billion yuan, 8.7 percent more than in 1980.

In their implementation of the spirit of Central Committee notices on active development of rural economic diversification, the country's far-flung rural villages have given serious attention to the study of ways to generate capital,

amass capital, and use capital, and have persevered in following the path of large-scale agriculture for all-around development of agriculture, forestry, animal husbandry, sideline occupations, fisheries, industry, and commerce. Everywhere much work has been done in the development of economic diversification, most of it in the following regards:

(1) Adaptation of general methods to local situations to make the most of advantages, to make a rational overall layout, and to do a good job of planning. China is a vast land with abundant resources and copious manpower where avenues for development of economic diversification are broad. Though natural conditions vary from one region and from one unit to another, each has its own advantages and characteristics. In Liaoning Province, for example, the mountainland area is large, the marine coastline long, and the whole province is "60 percent mountains, 10 percent water, and 30 percent farmland." One of its great strengths lies in its mountainlands and water. The province's rural workforce numbers 7 million. Following institution of production responsibility systems, more than 30 percent of the workforce became surplus, but from time immemorial the peasants have had a tradition and experience in economic diversification. It has been one of the country's major silkworm cocoon, tobacco, fruit, and cotton growing areas where development of economic diversification has great potential. Large and medium-size cities are numerous, transportation is well developed, and superior conditions exist for development of commodity production. On the basis of these characteristics, Liaoning Province was divided into five large tracts as follows: the central plains area where the terrain is flat, the soil fertile, the climate agreeable, the potential for increased production very great, and the commodity rates high, which was designated the province's commodity grain base; the eastern mountain regions with many mountains, forests and much water, and where local specialties are abundant, which was designated primarily for forestry in a combination of forestry, agriculture, and livestock raising, forestry resources being protected, nurtured and used, while cattle raising and tussah silk cocoons and flue-cured tobacco production were actively developed; the southern and southwestern hill region whose abundant production of apples, peanuts, cotton, and aquatic products are to be fully exploited through the construction of fruit, peanut, cotton, and aquatic production bases; the western windblown sand region where vigorous efforts are to be made for development of the planting of trees for afforestation, the rotational cropping of grain, oil-bearing crops, and grass, and a combination of agriculture, forestry, and animal husbandry for gradual change in the low yield situation to make the area into an oil-bearing crop and livestock industry base; and building of all suburbs into bases for the production of nonstaples such as vegetables, eggs and meat.

(2) Making full use of the enthusiasm of collectives and individuals. Both collectives and individual commune members are enthusiastic about development of economic diversification. In places and units where these two enthusiasms have been brought into play, economic diversification has proceeded rapidly and income has increased. The main ways in which various places have brought these two enthusiasms into play have been as follows:

1. Whatever lends itself to collective efforts is collectively administered with the adaptation of general methods to local situations to establish

specialized corps, specialized teams, specialized households and specialized individuals commensurate with production to carry out specialized contracting, calculation of compensation being linked to output. Alternately is calculation of compensation on the basis of output value or net income, or else on the basis of producing a fixed number of items, or the practice of contracting individual work tasks.

2. Whatever lends itself to individual efforts, commune members should be encouraged to handle, collectives giving any needed support. For units practicing the contracting of production or work tasks to individual households, in addition to encouraging commune members to do a good job of household sideline occupations, attention should be devoted to the strengthening, consolidation, and development of collective economic diversification to guard against and overcome a tendency to wash ones hands of any responsibility for collective industrial sideline occupations or even to simply break them up.

3. Promotion of joint commune, brigade, and household operations. In one instance, in the raising of rabbits at Fudun Commune in Beizhen County, Liaoning Province, the method adopted was "commune establishment of a farm to be managed by the production brigade and organized by a small group, commune members doing the raising," the commune being responsible for providing investment capital, for rabbit breeding stock, for providing technical guidance, and for preventing epidemics; the production brigades being responsible for supplying the means of production, for apportioning rabbit breeding stock, for marketing, and for signing of agreements; small groups being responsible for specific organization of production; and individual households doing the raising of the rabbits. This method brought very good results with more than 200,000 commodity rabbits being reproduced in 1 year.

4. Active arrangements for operations involving associated households. In some places practicing the contracting of production quotas and the contracting of responsibility for task completion to individual households, commune members acted on their own volition to associate for the operation of industrial sideline occupations. A survey done in the three counties of Dingtao, Heze, and Juancheng in Heze Prefecture, Shandong Province, showed households that have voluntarily associated number about 10 percent of the total. Heze County has more than 30,000 households of commune members who have formed more than 10,000 new economic associated groups, which is 16 percent of the total number of households. A single associated group has as few as three households or as many as 10 to 20 households. Following association, they purchased 1,159 machines of various kinds, bought 8,050 head of livestock, and operated 1,098 industrial sideline occupations of various kinds.

5. Except for those suitable for collective operations, all barren mountains, uncultivated shore areas, abandoned land, and pond water surfaces were designated for individual commune member operations, the number of years they were to enjoy their use clearly specified.

(3) Expansion of private plots, land for raising of livestock feed, and setting up of privately retained people. A representative sampling done in some places showed that when commune members farmed 1 mu of private plots,



their income was 200 to 300 yuan at the very least, generally between 400 and 500 yuan, and as high as almost 1,000 yuan. Appropriate expansion of private plots is truly an important measure for peasants to achieve prosperity. Everywhere in the country general methods have been adapted to local situations for appropriate expansion of private plots and plots for the growing of livestock feed, with privately retained people being set up. Private plots and land for the growing of livestock feed was generally doubled from the former 5 to 7 percent of the cultivated land area. The maximum limit was 15 percent of a production team's total cultivated land area. Except during the busy seasons in farming, some semi-ablebodied or part-time farm workers and supplementary workers were exempted from collective work, the better to devote themselves solely to household sideline occupations insofar as possible, i.e., they were permitted to be what the masses called "privately retained people." As to the specific numbers of such people that should be suitably retained, each jurisdiction made a judgment on the basis of its workforce surplus situation.

For the sake of rapid development of agriculture to attain better economic benefits, work in the following several fields should receive future emphasis.

1. Continued Perfection and Consolidation of Production Responsibility Systems. It is necessary to conduct "two unchanges" indoctrination of the broad masses of grassroots cadres and peasants so that everyone will understand that China's agriculture must adhere to the path of socialist collectivization, and adhere to public ownership of the basic means of production without change for a long period of time, the collective economy practicing production responsibility systems for a long time without change. The various forms of production responsibility systems currently being practiced including the contracting of jobs to be done in a certain period of time, calculation of compensation for fixed amounts, specialized contracting with calculation of compensation being linked to output, the linking of output to individual workers, the contracting of fixed output quotas to individual households or teams, the contracting of sole responsibility for task completion to individual households or teams, etc. are production responsibility systems in the socialist collective economy. No matter the form adopted, so long as the masses do not demand change, there will be no change.

Improving and perfecting agricultural production responsibility systems requires continued adherence to the principles of adapting general methods to local situations and providing tailored guidance. The proliferation of various individual forms of responsibility systems that exists today in different areas is the result of the masses flexible application of contracting forms on the basis of different local production conditions. Different forms of contracting have an applicability and limitations to specific places and conditions. Even within a single production team, different forms may be adopted depending on the kind of production being done and the types of work. In guiding the masses to settle on a form of production responsibility system, adaptation of general methods to specific production teams should be truly achieved.

In the process of improving and perfecting agricultural production responsibility systems, collective ownership of the land must be adhered to, diligent

attention given to protection of cultivated land and rational use of cultivated land. Attention should be given protection of large farm machinery and equipment, irrigation facilities, plow oxen, and collective industrial sideline occupations so that they will not sustain damage. A good job should be done in the formulation of contracts, the economic relationships and the rights and obligations of both parties to contracts between production teams and peasant households or work teams, or specialists being spelled out.

2. Adherence to the Principle of Taking the Planned Economy as the Key Link, Market Regulation Being Supplementary. The agricultural economy is an important integral part of the national economy. The agricultural economy's development is inseparable from the guidance of state plans. No matter the form of production responsibility system practiced, the agricultural economy must institute a planned economy and must take the planned economy as the key link, market regulation being supplementary. In all arrangements for agricultural production, it is necessary to make sure that the bringing into play of advantages of a portion is subordinate to a rational plan for the overall situation. All places suited to the growing of grain should understand the overall situation and be concerned for the whole, developing grain production actively in accordance with state plans. Suburban peasants should farm vegetables for the most part and the vegetable growing area should be diligently maintained. Economic crops are to be grown according to state plans. Development of economic diversification also requires acceptance of state plan guidance. Products such as grain, cotton, and edible oil require adherence to centralized purchase and centralized marketing policies. Tasks must be fixed and purchase quotas assigned for the raising of hogs. In instituting quota purchases for Category II agricultural sideline products, reasonable base procurement figures must be set and guaranteed without change for several years. In the case of varieties for which base figures cannot be readily set, reasonable proportions for purchase and retention must also be set. In the case of products above and beyond base figures, some will continue to be purchased by the state, a proportion of some will be purchased, and communes and brigades as well as peasants will dispose of the entire amount in some cases. In short, only when agriculture adheres to the principle of taking the planned economy as the key link, market regulation being supplementary will the long-range interests of the peasants be served and the building of the country be done well.

3. Strict Attention to Grain Production and Active Development of Economic Diversification. Grain is a major problem that bears on food to eat for the country's 1 billion population, and it is also the foundation for forestry, animal husbandry, sideline occupations, fisheries, and other economic diversification. Gradual achievement of self-sufficiency in grain and steady improvement average per capita amounts are the long-term goals of struggle. In order to assure steady increase in grain, it is necessary, first of all, to stabilize the area sown to grain. Changes made during the past several years in using land not suited to the growing of grain crops for the growing of economic crops or for reversion to forests, pasturage, or fisheries was necessary. In terms of the country as a whole, as a result of the readjustments of the past 3 years, the proportion of grain to economic crops is now substantially rational and should be stabilized on this foundation with no further reduction in the grain growing area. This is because only by assuring

increase in grain can other production have a reliable basis. Making the most of advantages must proceed from the overall; the total situation has to be looked after and general methods adapted to local situations if greater economic benefits are to be derived.

There should be great development of economic diversification in economic crops, and in forestry, animal husbandry, sideline occupations and fisheries; however, this should not have to depend on the elbowing aside of grain; rather it should depend on raising yields per unit of area and on using the not yet fully used barren mountains and uncultivated land at the edge of bodies of water. In many places the growing of economic crops is just now reviving; yields per unit of area are very low and the potential for increased yields is very great. China's natural resources are extremely abundant; large expanses of mountains, hills, grasslands, rivers, lakes, and ponds as well as coastal and maritime areas have as yet to be fully used. In the future it will be necessary to establish a concept of large-scale agriculture, to carry out with resolution a program of "positively no slackening of grain production while actively developing economic diversification," develop natural resources for use in a planned way, and constantly open up new production avenues. Then development of economic crops and economic diversification will have an extremely broad scope.

4. Intensification of Scientific and Technical Education and Vigorous Training of Personnel. In order to strengthen scientific agricultural research and make full use of the role of scientific and technical personnel, it is necessary to proceed from reorganization and readjustment to mobilization and organization of research forces in all quarters, to closely relate near-term and long-term requirements in agricultural, forestry, animal husbandry, sideline occupation and fisheries production, to work out a group of key research projects, and to tackle science and technology in a planned way.

It is necessary to continue to revive and build up organizations for the promotion of farm techniques at all levels and to augment and strengthen technical forces, actively adapting general methods to local situations for the promotion of the fruits of existing agriculture science and technology.

It is necessary to continue to try out and do a good job of various forms of agricultural technique responsibility systems, and to launch a mass technical cooperation and popularization movement.

It is necessary to continue to do a good job in surveying agricultural resources and zoning agricultural areas for equitable development, use, and protection of natural agricultural resources, and to provide a scientific basis for readjustment of the structure of agricultural production and of crop patterns.

Energetic efforts should be made to intensify agricultural education and cadre training. There should be further strengthening of leadership, improvement in educational conditions, proper operation of existing agricultural institutions of higher learning, and restructuring of middle school education. Specialized training of all levels of agricultural leadership cadres, management cadres, staff and workers should continue. Conditions should be created for the strengthening of peasant education to raise scientific and cultural levels.

5. Continued Improvement of Rural Commodity Flow. In view of current conditions in the country, for some time in the future, a program of fundamentally stable purchase prices for agricultural sideline products must be adopted. Increase in peasant income should not look to increase in purchase prices or lowering of base procurement figures; rather it should rely primarily on development of economic diversification and development of commodity production for greater output and greater sales. If rural businesses are to meet the needs of a commodity economy, it is essential that means be found everywhere for keeping open and developing new flow channels for rural commodities. State-owned businesses and supply and marketing cooperatives should make full use of the existing business structure, break through regional barriers, organize commodity flow on the basis of economic laws, and vigorously launch product sales promotion work. In addition it is necessary to try out and develop in a planned way commune and brigade collective businesses such as trade warehouses, integrated supply and marketing directorates, and integrated agricultural-industrial-commercial enterprises, etc. for gradual establishment of a rural commercial system of many components, many channels, and few links.

6. Efforts To Increase Economic Benefits. As in other economic sectors, agricultural production should devote special attention to the principle of economic benefits and strive to achieve the maximum benefit for the minimum investment. The farming industry, the breeding industry, and rural industrial sideline industries alike must emphasize increase in yields per unit of area, and increase their labor productivity rates. Increases in grain and economic crop yields depend primarily on a change in wide planting for narrow harvests and institute intensive and meticulous farming and restructuring of intermediate and low yield fields. The livestock raising industry has to improve its out-of-inventory rate, its meat dressing rate, and its rate of production of bristles, furs, and feathers. Other industries should strive to increase economic benefits.

7. Strengthening of Rural Ideological and Political Work and Guilding of Grassroots Organization. Today an overwhelming majority of the country's rural production teams have established different forms of production responsibility systems that have further stirred the socialist enthusiasm of the broad masses of peasants and grassroots cadres. However, inasmuch as institution of production responsibility systems is a profound and complex transformation, ideas and habits inherited from the old society have come to the surface in some peasants, and in some grassroots organizations ideology and work style have been inappropriate for a time; a state of laxity, paralysis, or semiparalysis has occurred at the grassroots level. Consequently, further strengthening of rural ideological and political work and building of grassroots organizations is an extremely important and pressing task at the moment. In this connection, party organizations at all levels should assiduously propagandize and put into effect party programs, policies, and guidance for prompt resolution of new problems that have cropped up in the production responsibility system process. They should bring into play the role of the Communist Party as model and leader in all respects, should institute rotational training of rural party members in a planned way, beginning with commune and brigade cadres, and should organize them to study the party's various rural policies to increase their understanding. The party's organizational life should be

strictly regulated, the party lecture system should be improved; and criticism and self-criticism should be carried out so that the party's grassroots organization in rural villages truly become a nucleus and a powerful fighting force for uniting the broad masses of peasants to move forward. It is necessary to intensify the reorganization and building of rural leadership teams at all levels, to improve leadership methods and workstyles, to institute a division of labor between party and government, and to make use of the role of functional sectors.

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## CHINA'S GRAIN CULTIVATION

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[Text] China is a country whose principal diet is grain, and it is also one of the world's principal producers of grain. Grain production is the main sector of the growing industry and holds an extremely important place in agriculture. Statistics show that in 1981 China's grain crops occupied more than 1.1 billion mu of 78 percent of the country's total cultivated land. Inasmuch as most areas practice multiple cropping for a 150 percent multiple cropping index, the area sown to grain is more than 1.7 billion mu or 13 percent of the world total. Output totals 650.04 billion jin annually or 18 percent of the world total, second only to the United States in the world. In addition China has a fine tradition of intensive and meticulous farming, and a relatively high soil productivity rate. During the past more than 30 years China has supported almost one-fourth of the world's population on less than 7 percent of the world's cultivated land, an astounding accomplishment.

### (1) Distribution Patterns and Structure of Grain Crops

It is the practice in China to term grain all the cereal grains, tubers, and pulses consumed by humans. These three categories of grain crops contain more than 20 varieties, cereal types being the largest and including, paddy rice, wheat, barley, rye, oats, corn, gaoliang, millet, broomcorn millet, billion-dollar grass, and buckwheat, the area sown to which is 85 percent of the total grain crop area, and the total output from which is close to 90 percent of all grain crops, making it the major portion of China's grain. Second is tubers including sweet potatoes, potatoes, and cassava. Finally, come the pulses including soybeans, mung beans, broad beans, peas, and other miscellaneous pulses. This complete mix of grain crops that has come into being through long-term development helps utilize China's natural resources and satisfies people's needs.

Grain crops are distributed widely in China, covering virtually the entire country. From the Qinghai-Tibet Plateau at the roof of the world to the shores of the East China Sea, and from the banks of the Heilong Jiang to the archipelagos in the South China Sea, grain crops are grown on equal areas in the country's 30 provinces, municipalities, and autonomous regions. Areas with a growing area of more than 100 million mu include the five provinces of

Sichuan, Henan, Shandong, Hebei, and Heilongjiang. The provinces of Jiangsu, Anhui, Hunan, and Hubei also grow more than 80 million mu each. Sichuan is the province with the highest output, which comes to more than 60 billion jin. Jiangsu, Shandong, Henan, and Hunan also produce more than 40 billion jin each. Because of differences in natural conditions each area grows mostly one or more specific grain crops, making for a relatively stable area of distribution for different crops. Generally speaking, in the 13 provinces, municipalities, and autonomous regions to the south of the Huai He and the Qinling mountains and east of the Qinghai-Tibet Plateau, because of the copious rainfall and the large area of paddyfields, this is the principal paddy rice growing area. A 476 million mu area is sown to rice. This is 94 percent of the country's cultivated land area and produces 93 percent of its output of rice. The Huang (He) Huai (He)-Hai (He) Plain to the north of the Huai He and the Qinling Mountains, China's northwestern provinces, and the area around the bend of the Huang He in Nei Monggol are the principal winter wheat, corn, millet, gaoliang, soybean, and tuber growing areas. This includes 65 percent of the area sown to winter wheat and produces about 65 percent of the country's wheat. It may be termed China's principal wheat growing area. The three provinces of north-eastern China grow mostly corn, soybeans, spring wheat, gaoliang, millet, and potatoes. The Qinghai-Tibet Plateau grows cold tolerant highland barley, peas, and spring wheat for the most part. The regional distribution of grain crops that is both relatively centralized and at the same time dispersed holds strategic significance for solution to China's grain problem.

Apart from the division of sowing times into winter-sown (mostly winter wheat and winter barley), spring-sown (including early rice, intermediate rice, spring corn, spring sweet potatoes, spring millet and spring soybeans), and summer-sown (including summer corn, summer sweet potatoes, summer millet, summer soybeans, and buckwheat), the structure of the diverse grain crops grown in individual areas is principally the following:

1. Seasonal (Harvest Time) Structure. Grain crops consist of autumn grain (including intermediate rice, late rice, corn, millet, gaoliang, soybeans, and sweet potatoes), summer grain (including wheat, barley, broad beans, and peas), and early rice. The autumn grain crop has always been China's main grain crop and has accounted for about 63 to 66 percent of both the area sown and the output. How good the harvest in this season usually determines whether output for the year as a whole will be a bumper one or a lean one. Summer grain is also very important, and for many years the area sown to summer grain has been maintained at around 25 to 26 percent. The output ratio has gradually climbed to 18-20 percent to play an important role in grain distributions for the year as a whole, and in providing for the people's livelihood in cities and the countryside. Early rice is harvested in between the summer grain and the autumn grain crops. Since founding of the People's Republic, growing of early rice has increased, the area sown to it rising from 5-6 percent of the total to about 10 percent, and output rising from 10 to 15 percent. It accounts for 35 percent of total paddy rice output and holds a crucial position in the country's production of husked rice.

2. Varietal (or Crop) Structure. In the structure of China's grain varieties (or crops), paddy rice holds the highest ratio. Second comes corn, wheat, and

tubers followed by gaoliang, millet, soybeans and other miscellaneous grains. This structure has come about gradually as an accompaniment to steady improvement in production conditions and technical levels, as well as in response to steady increase in various requirements through adaptation to and use of the country's natural conditions. This has been manifested as follows:

- (1) Adaption to and use of various natural conditions. Ours is a vast land that straddles the cool temperate zone, the high frigid climatic region, the temperate zone, the warm temperate zone, the subtropics, the tropics, and the equator, 70.5 percent of its area being the temperate, warm temperate, and subtropical zones where light and heat conditions are superb. Thus, most of the country's grain crops are thermophilic. In addition, as a result of the effects of monsoon and continental climates, it is divided into humid, semi-humid, arid, and semiarid regions. In the three areas other than the arid one, an overwhelming majority of the existing grain land is distributed. That the ratio of paddy rice and other crops requiring substantial amounts of water has always been very large in China is also attributable to this characteristic.
- (2) Suited to China's characteristics of huge population, rapid increase, and very large needs for grain. In this crop structure, the ratio of crops that have fairly high yields per unit of area such as rice, corn, and tubers is very large. Taken together, the area sown to the three has always been more than 40 percent, and during the past 10 years it has been more than 50 percent. Output has also increased from 60 percent to 70 percent. Corn and tubers, in particular, though customarily termed coarse grains, have continued to be maintained at a substantial ratio during times of grain shortage or insufficiency so that their quantity will assure grain needs.
- (3) Suited to improvement of the people's lives. Improvement in the lives of the people is reflected in grain. Once people have sufficient to eat, they want to eat well, consumption of fine grains such as husked rice and white flour as well as products made from beans that have high nutritional value gradually increasing. In terms of crop structure, this means development in the direction of high outputs of superior quality. Specifically the ratio of the area sown to wheat has climbed from about 23 percent in the 1950's to close to 30 percent, and though output ratio has fundamentally stabilized at about 45 percent, absolute output has doubled. The area sown to wheat has increased from 20 percent to 25 percent, and the output ratio has risen from 11 percent to 17 percent, with absolute output increasing twofold. Taken together, output from the two amounts to 62 percent of total grain output to occupy a commanding position. In addition, during the past 2 years slight revival has occurred in the area sown to soybeans, more than 10 percent increase taking place between 1980 and 1981, the ratio rising from 6.1 percent to 7 percent, which was equal to the proportion during the 1960's.
- (4) Suited to diverse requirements. Grain and its byproducts have diverse uses in China. The people's diets require paddy rice, wheat, corn, gaoliang and tubers as staples, and soybeans and various miscellaneous grains are also needed to improve and regulate life. In addition, the livestock feed industry requires large quantities of various kinds of grains and their byproducts as livestock feed and hay. Some crop stems and stalks are indispensable



materials in construction. Therefore, the current grain crop structure is a complex structure of diverse crops. Both the absolute dominance of the major crops and maintenance of a definite ratio of secondary crops accords with the diversity of the masses' needs.

## (2) Development Situation

Ever since founding of the People's Republic, both the party and government have always placed development of grain production in an extremely important position, with the result that sustained development has brought very great accomplishments. A comparison of 1981 with 1949 shows the country's total grain output increased from 226.4 billion jin to 650.04 billion jin, a 1.9 fold increase in a period of 32 years for an average annual 3.4 percent incremental increase. Yields increased from 171 jin per mu of cultivated land to more than 500 jin, a threefold increase. Grain per capita rose from an average 418 jin per capita to more than 650 jin, a 57 percent increase. Peasant supply to the state of commodity grain increased 2.5 times. This substantially assured needs for the country's population growth, improvement in the people's living standards, and development of the national economy.

As a result of the effects of political and economic human and natural factors of various kinds, during the past more than 30 years China's grain growing industry has gone through the following several stages of development:

1. From 1949 to 1957. This was the period in which both the scale of production and the level of production developed rapidly at the same time from a basis of stagnation and deterioration of the grain growing industry of old China. In 1949 the state area sown to grain in the country was 1.65 billion mu, yields averaging only 137 jin per mu. By 1957 the area had expanded to more than 2 billion mu, yields increasing to an average 195 jin per mu. Simultaneous expansion of area and increase in yields per unit of area brought about an increase in total grain output from the 226.4 billion jin of 1949 to 327.8 billion jin in 1952, a 44.8 percent increase or an average annual incremental increase of 13 percent. In 1953, after the country entered the period of planned economic construction, national grain output continued to increase as an average 3.5 percent per year. By 1957 it reached 390.1 billion jin, 19 percent more than in 1952 and 72 percent more than in 1949. In a period of 8 years total grain output increased by more than 160 billion jin. About 40 percent of this increase resulted from an expansion of the area and from changes in the crop structure; 60 percent derived from increases in yields per unit of area.

2. 1958 to 1965. During this period China's grain growing industry sustained severe setbacks. It was a period of detours followed by revival. In 1958 extremely serious errors occurred in the direction of China's agricultural development, which stifled peasant enthusiasm for production. False grain output figures led to overly high estimates of the land's production potential and unrealistic programs were put forward for high output from less planting for larger harvests. As a result the area sown to grain in 1959 fell from the 1.91 billion mu of 1958 to 1.74 billion mu, a drastic decline by 170 million mu in a single year. This plus the occurrence of serious natural disasters

caused a 60 billion jin decline in the country's total grain output. The serious grain shortage not only occasioned great impairment to development of the national economy during the succeeding 2 years, but productivity of the grain growing industry itself also sustained damage. Continued natural disasters increased hardships for the grain growing industry, with the result that total grain output for 1960 and 1961 declined to virtually the 1951 level. In the winter of 1960 the CPC Central Committee decided to carry out a program of "readjustment, consolidation, replenishment, and upgrading" for the national economy. In 1962 the 10th Plenary Session of the 8th Party Central Committee decided to take agriculture as the foundation for the national economy, renewed emphasis in the need for priority development of grain production, the grain growing area thereby obtaining conditions for development. As a result of 3 years of readjustment, the sown area revived, and in 1965 yields averaged 217 jin per mu to exceed those of 1957. Total output climbed back to 389.1 billion jin for a virtual revival of the 1957 level.

3. 1966 to 1976. This was the stage in which China's grain growing industry surmounted serious human interference to achieve sustained growth. In 1966 the beginning of the "Great Cultural Revolution" occasioned serious calamity for the country's political affairs and economy. Nevertheless, thanks to the joint efforts of the entire party and the broad masses of rural cadres and masses, this damage was contained to a certain extent, and grain production continued fairly stable growth. By 1976 grain output totaled 572.6 billion jin, 47 percent more than in 1965 for an average 3.6 percent annual incremental increase.

4. 1977 to 1981. This was the stage of readjustment of the development of the grain growing industry. The country's smashing of the "gang of four" in 1976 created extremely favorable conditions for further development of the grain-growing industry. Following the 3d Plenary Session of the 11th Party Central Committee, in particular, the work focus gradually shifted to modern socialist construction, and an overall program of "readjustment, restructuring, reorganization, and upgrading of the national economy was put forward. China's grain growing industry concurrently entered a new era of readjustment of development. Within the short space of several years, remarkable results were achieved as year after year grain production saw good harvests. In 1979 total grain output increased tremendously to 664.2 billion jin. In 1980 and 1981, despite serious drought and waterlogging disasters, total output still increased by 63.8 billion and 77.4 billion jin respectively over the 572.6 billion jin of 1976.

Readjustment of development was manifested in the following specific ways:

(1) The party formulated a series of programs and policies on the development of agriculture. These readjusted rural production relationships, suitably liberalized rural economic policies, respected the self-determination of production teams, and generally instituted various forms of production responsibility systems, as well as increased state purchase prices for grain. They stirred grain farmers to extreme enthusiasm for production, and the power of policies played a leading role in increases in grain output.

(2) Readjustment of agriculture's internal production structure. In some places not suited to the growing of grain such as pastoral and semipastoral areas, and some hill and mountain regions suited to the growing of forests in Nei Monggol and Qinghai, as well as in places that had filled in lakes to make fields in south China, cultivated land was allowed to revert to forests, to pasturelands, or to fisheries. Some other areas or fields not suited to the growing of grain were converted to the growing of appropriate economic crops.

(3) Readjustment of the farming system and crop patterns for grain production. In some high yield places where the multiple cropping index was overly high, where two crops could be grown better than three, or one crop grown better than two, appropriate readjustments were made in the farming system and in crop patterns. In south China this was done mostly in places at too high an elevation above sea level, or too far north, or where there were labor shortages or conflicts in growing seasons, the double rice crop area being reduced. Guangdong and Hunan Provinces also reduced tremendously the growing of wheat where it was not suited for growing. In north China mostly the summer grain area was scaled down and the early autumn grain area increased. Some places not suited to three plantings and three harvests revived the system of two crops every 3 years. Within grain, great reduction was made in the area planted to sweet potatoes, and the growing of some pulse crops was restored. This helped combine use of the soil and nurture of the soil. Though these readjustments reduced the national multiple cropping index for grain from 157 percent to about 150 percent, they played a very great role in increasing yields per unit of area.

(4) Readjustment of grain crop varieties. Numerous places made new arrangements for the combination of crop varieties to be planted. In doing so they took into consideration climate, natural disasters, and soil conditions. They enlarged varieties suited to local conditions possessing strong resistance. Places in north China prone to killing frosts and freeze damage promoted early ripening cold resistant varieties. Cold, arid, infertile places brought back some peasant varieties tolerant of drought and infertility, thereby making the most of advantages while avoiding disadvantages, and increasing ability to withstand natural disasters.

As a result of the past several years of readjustments, the national grain growing area has been reduced by more than 100 million mu, and all-around increase in the growing of economic crops and other economic diversification advanced. Meanwhile, in areas sown to grain, rapid increase has occurred in yields per mu (an average 13 jin per mu annual increase), fundamentally assuring steady growth of total output. In overall national terms, the current ratio of grain crops among farm crops is fundamentally right, and the country is beginning to enter a new stage of stable areas, increased yields per unit of area, guaranteed total output, and sustained increase in production.

### (3) Future Tasks and Direction of Development

For a long time in the future, China will continue to consume mostly grain. With continued population growth, gradual improvement in the people's standard of living, and further development of all sectors of the national economy,

grain requirements will continue to increase steadily and solution to this problem will depend principally on domestic production and self-reliance. The task that China's grain growing industry faces is an extremely formidable one requiring all-around implementation of a program of "positively no slackening of grain production, while actively developing economic diversification," to make development of grain production a long-term strategic goal to be conscientiously given strict attention.

China has a large population relative to available land. Horizontal expansion by the grain growing industry to empty areas must be limited, so the inevitable trend is toward development in a vertical direction. This was so in the past, and it will be even more conspicuous in the future. During the past 30 years, as a result of year by year increase in the use of land for purposes other than grain production, the amount of grain growing land in the country has fallen to an average of only 1.1 mu per capita. There is not much uncultivated land that can be reclaimed, so replenishment is difficult. Following readjustment during the past several years, marked decline has taken place in the multiple cropping index of existing cultivated land, and the area sown to grain has been greatly reduced. It will be necessary to assure steady future increase in grain yields, and the major way to do this is to tap potential for increased yields of the limited cultivated land. In national terms, increased grain production will come mostly from greater yields per unit of sown area. In order to make full use of China's abundant agricultural workforce, more intensive and meticulous cultivation of existing cultivated land will be required, with efforts made to make new breakthroughs in breeding, farming, and fertilization. The state will also continue to put into effect various effective programs and policies, to further arouse grain farmer enthusiasm for production, to organize and help them launch capital construction in agriculture, increase investment in support of a restructuring of agricultural and industrial techniques, provide more and better chemical fertilizer, pesticides, and other technical equipment so as to improve production conditions, and to assure steady increase in grain yields per unit of area. In view of the currently large area of medium and low yield fields, poor conditions, low standards, and great potential, the focus of increase in yields per unit of area should go to these areas to help gain greater and faster economic benefits.

Yet another characteristic of China's future development of the grain growing industry will be vigorous increase in the amounts of commodity grain. Since China has a large rural population whose labor productivity rate is not high, every year between 70 and 80 percent of the grain produced is consumed by rural villages and the peasants themselves, and as peasant living standards rise, there will be no marked decrease within a short period of time. In addition, as a result of the regionalization and specialization of agriculture and development of the national economy, ever increasing demands will be made for supply of commodity grain. In addition to nationwide increase in output, increase in the commodity rate and use of rational policies to induce peasants to provide more commodity grain, more important for solution of this problem is accelerated construction of commodity grain bases. In the course of the country's long-term development of the grain growing industry, a number of commodity grain areas and commodity grain counties have come into being. Commodity grain counties able to provide more than 100 million jin of grain annually

already number more than 300. This is more than half the national net amount of state purchases, and they make a very great contribution. The country will take effective measures to consolidate development of these old commodity grain bases. In addition, it will gradually increase investment, and in places where there is much land relative to population, the production potential being fairly large, the state will build new commodity grain bases in order to assure national grain requirements.

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## CULTIVATION OF CASH CROPS IN CHINA

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[Article by Shen Qizhu [3088 0366 6999] and Ding Baohua [0002 0202 5478]]

[Text] Cash crops are also called technical crops, which is a general term applied to farm crops other than grain that includes cotton, oil-bearing crops, hemsps, silk, tea, sugar, vegetables, tobacco, fruit, and Chinese medicinal herbs, etc. Cash crops hold an important position in the national economy. They not only provide various kinds of the means of livelihood, but are also industrial raw materials. Development of cash crop protection plays a crucial role in increasing the country's revenues, strengthening the collective economy, increasing peasant economic benefits, enlivening markets, and earning foreign exchange from exports. Statistical data show that during the past several years tax revenues and industrial and commercial profits from flue-cured tobacco and cigarettes alone have annually accumulated more than 5 billion yuan for the state, which is 5 percent of the country's annual revenues. Export of more than 70 million tons of natural silk and silk manufactures has earned more than \$700 million in foreign exchange, making it second only to petroleum as an earner of foreign exchange. Cotton cloth not only solves the need for clothing of a 1 billion population, but is also sold abroad in many countries and places. Tea exports also earn more than \$200 million. Sugar, vegetables, and fruit are all important nonstaple foods.

Cash crops have a long history in China. Ramie, silkworm mulberry, tea, and many, many vegetables, fruits, and medicinal plants originated in China, and abundant experience in their production has been accumulated as a result of generation after generation of struggle by the laboring masses to produce them and as a result of scientific experiments. However, shackled for a long time by the backward, feudal system, old China's commodity economy was extremely undeveloped, and prior to Liberation it suffered from the Japanese imperialists war of aggression against China and devastation and destruction wrought by the Kuomintang reactionaries. As of the eve of Liberation cash crop production was consequently very backward. In 1950 cotton output totaled 13.85 million dan, sugar output totaled 6 million dan, tea 1.3 million dan, and fruit 26.49 million dan. On the basis of the population at the time, this was a per capita average of 2.3 jin of cotton, 1 jin of sugar, 0.2 jin of tea, and 4.4 jin of fruit. Outputs of other cash crops were also very slight. This state of affairs was far from being able to satisfy the needs of people's daily

lives and economic construction. Following founding of the People's Republic, the party and government devoted extremely serious attention to the production of cash crops. They formulated a series of program, policies, and major measures to support and encourage cash crop production. Despite several ups and downs in cash crop production in the course of more than 30 years, the overall situation was good, and substantial growth has taken place for all cash crops. Following the 3d Plenary Session of the 11th Party Central Committee, in particular, the party's Eight-Character Program of readjustment, restructuring, reorganization, and upgrading was thoroughly carried into effect in each rural cash crop growing area, and year after year bumper harvests of cash crops have been brought in. A comparison of 1981 with 1950 shows gross output of cotton to have increased by more than 3 times, sugar more than 9 times, jute and ambari hemp 13 times, flue-cured tobacco almost 20 times, and silkworm cocoons, tea, and fruits about 4 times each. Very great increase also occurred in production of oil-bearing crops, vegetables, and Chinese medicinal materials, thereby changing the rural economic structure with its single-product grain production (see table for detailed figures).

Table Showing Development of Several Major Cash Crops Since Foundation of the People's Republic

(a) 单位: 面积: 万亩 单产: 斤/亩 总产: 万担									
(b) 年 份	(c) 棉 花			(d) 油 料			(e) 糖 料		
	面(i)积	单(j)产	总(k)产	面(i)积	单(j)产	总(k)产	面(i)积	单(j)产	总(k)产
1950	5678.9	24	1384.9	6265	95	5944	199.9	3379	6755.6
1952	8363.6	31	2607.4	8570.9	98	8386.3	326.3	4655	15189
1957	8662.9	38	3280	10398.4	81	8391.9	638.9	3723	23787
1978	7299.6	59	4334	9333.3	112	10436	1319.2	3611	47647.4
1979	6767.7	65	4414.7	10577	122	12870.9	1255.2	3922	49226.7
1980	7380.5	73	5413.4	11892.6	129	15381.1	1383.3	4209	58225.5
1981	7730	74	5711	13747	139	19147.6	1474.2	4776	70408

(b) 年 份	(f) 黄 红 麻			(g) 烤 烟			(h) 茶 叶		蚕茧总产	水果总产
	面(i)积	单(j)产	总(k)产	面(i)积	单(j)产	总(k)产	面(i)积	总(斤)	(l)	(m)
1950	72.7	217	157.6	91.8	123	113	254	130.4	117.7	2649
1952	237.2	258	611	279.1	159	443	336	165	247	4886
1957	213.7	282	601.9	533.1	96	512.1	494	223.2	224.6	6495
1978	618.2	352	2175.5	919.9	229	2104.4	1572	536	455.5	13139.4
1979	542.5	402	2178.8	763.4	211	1612.2	1576	554.2	541.5	14029
1980	471.1	466	2196.7	595.1	241	1433.3	1561	607.5	650.9	13585
1981	477	475	2270	903	262	2368.4	1560	650	606	14952

Key:

- |   |                                  |
|---|----------------------------------|
| (a) Units: Area: 10,000 mu<br>Yields per unit of area: jin/mu<br>Total output: 10,000 dan | (g) Flue-cured tobacco           |
| (b) Year  | (h) Tea                          |
| (c) Cotton  | (i) Area                         |
| (d) Oil-bearing crops   | (j) Yield per unit of area       |
| (e) Sugar crops   | (k) Gross output                 |
| (f) Jute and ambari hemp  | (l) Silkworm cocoon gross output |
|   | (m) Fruit gross output           |

In the process of long-term development various cash crops gradually came to be concentrated in their own growing areas, Hebei, Shandong, Henan, Jiansu, and Hubei becoming the cotton growing region; the three provinces of the northeast becoming a soybean growing area; Guangdong, Guangxi, Fujian, Sichuan, and Yunnan becoming sugarcane growing areas; and Heilongjiang, Jilin, and Nei Mong-gol becoming sugarbeet growing areas. Xuchang Prefecture in Henan and Weifang Prefecture in Shandong are two tobacco producing areas; the Shandong Promontory and Liaoning Peninsula are apple growing areas; and the area south of the Huai He and the Chang Jiang is a tea growing area. These areas ordinarily possess two conditions: one is the ecological conditions of temperature, rainfall, sunshine, and soil suited to the crops grown in them; the second is the requisite socioeconomic conditions of fairly convenient transportation, a certain amount of processing equipment and technical skills, and masses experienced in farming and accustomed to growing the specific crops. In order the more effectively to increase production levels and provide more and better cash crop products, since founding of the People's Republic the state has used a series of policy measures to build cash crop production bases in areas in which their production is concentrated. These cash crop production bases have one dominant industry and economic diversification. The state shows them special consideration in the supply of means of production such as chemical fertilizer, pesticides, and plastic sheeting for agricultural use as well as investment, loans, promotion of new techniques, and price protection. Following many years of effort, a group of cash crop production bases of substantial size and production levels have come into being that demonstrate a major role in production. As of 1980, for example, there were 28 base counties in Shandong Province with a cotton growing area of more than 200,000 mu. In four cotton growing areas of Shandong Province alone, the cotton growing area covers 8.5 million mu and produces more than 8 million dan, which is 80 percent of the province's cotton output and one-seventh of total national output. In Guangdong Province, the Zhujiang Delta sugar cane base has an area of 1 million mu, which is about one-third the province's sugar cane growing area. It produces more than 8 million dan of sugar, which is more than half the province's cane sugar output. In Heilongjiang Province, 23 sugarbeet base counties (or municipalities) have more than 60 percent of the province's sugarbeet growing area. Mulberry silkworm base counties with an annual output of 10,000 dan each number 104, and their cocoon output accounts for 70 percent of the national total. Tea base counties with an annual output of more than 30,000 dan have also grown to more than 80, 20 of them being counties that produce more than 50,000 dan annually. A definite basis exists for the building of other cash crop bases for oil-bearing crops, tobacco, citrus fruit, and vegetables. This not only constitutes a basic condition for fairly rapid development of China's cash crops, but is also an important basis for future steady development of cash crops. Right now the country is engaged in agricultural zoning work, and for all cash crops a readjustment of production patterns will be done on the principle of adaptation of general methods to local situations, appropriate degree of centralization and making the most of advantages, and then the building of production bases will be intensified.

During the 1950's the Chinese Academy of Agricultural Sciences, and academies of agricultural sciences in individual provinces, municipalities, and autonomous regions established a series of institutes specializing in research on



cash crops, and quite a few agricultural institutions of higher learning improved their courses in agriculture, some of them setting up and improving specialties in silkworm mulberry, tea, fruit trees, and vegetables. Individual places also set up cash crop technical promotion stations and superior variety sapling farms to form a preliminary teaching, research, and technical promotion system. Inasmuch as the amount of cultivated land per capita is small in China, the main avenue for cash crop production lies in intensive agriculture and increasing yields per unit of area. The state is extremely attentive to improvement in basic soil, fertilizer, water and seed conditions. By way of improving the application and promotion of science and technology, during the mid-1950's it began to levy fees for technical improvement of silkworm cocoons, tea, citrus fruit, hemp, cotton, and such economic crops, withholding a certain proportion of funds on the basis of total value of purchases from purchasing departments to be handed over to principal producing departments for exclusive use in improving production techniques and production conditions. In recent years, large and medium size suburbs have also made regulations whereby they can use increased earnings from old vegetable field units to build new vegetable fields. During the past more than 30 years, very great improvement has occurred in the country's cash crop production and technical levels. As of now, in addition to the emphasis on development of mountain and hill regions for the growing of tea, mulberry, and fruit trees, in most cases where cash crops occupy farmland, after the land has been leveled a substantial amount of it has been irrigated. An estimated more than 40 million mu of vegetable fields and more than 70 million mu of cotton fields have been 60 percent and 50 percent irrigated respectively, and spray irrigation equipment has been steadily put into place for the growing of tea and fruit trees. Quantities of chemical fertilizer used increase year by year. Up until the time of Liberation, virtually no chemical fertilizer was used. Today, however, for cotton, sugar, and tobacco, an average of more than 50 jin per mu of chemical fertilizer, and sometimes as much as more than 100 jin, is applied annually. In large and medium size suburban vegetable fields, more than 100 jin per mu of chemical fertilizer is used. Use of superior varieties has played a major role in increasing cash crop yields. In the case of cotton, three nationwide changes in varieties were made, one during the early 1950's, one during the late 1950's, and one during the 1960's, the yields per unit of area increasing by from 10 to 30 percent on each occasion. Right now high yield varieties like Lumian No 1 are being promoted for cultivation. Thanks to the change in varieties, the quality of product improved and long fiber cotton production bases set up. Immediately following Liberation, mostly [Fencheng Huangjin] tobacco was grown in northeast China, and in Shandong Province mostly "Xiao-jinxing" was grown, yields averaging about 100 jin per mu. During the early 1960's these two varieties were replaced by bumper yielding and strongly disease resistant "Liaoyan" and "Jinxing 6007" varieties that produced yields of more than 300 jin. For other cash crops too, development has been closely related to the breeding and promotion to cultivation of superior varieties.

Additionally, a series of major reforms have been made in the farming system and in field care. In the growing of sugar cane, for many years experiences have been summarized and promoted in the breeding of superior varieties, in deep plowing to improve the soil, deep furrowing and shallow planting, changing from spring planting to fall planting, and such dryland sugar cane high

yield farming techniques for remarkable results in increased yields. The improvement of low yield tea plantations begun in the 1950's, the change from bunch planting to close contour planting with seed drills, and sensible picking of leaves has increased yields from 30 to 50 jin per mu to more than 200 jin per mu. In some suburbs, accompanying improvement in irrigation conditions has been a change from flat plots to upraised ridges in the growing of vegetables such as Chinese cabbage, and yields have gone up greatly as well. In comprehensive prevention and control of diseases and insect pests of various cash crops, proper watering and fertilizing and such field care, a body of effective experiences for increasing yields has been accumulated. During the last several years the pace has quickened in promotion and use of new techniques such as disease and pest control using natural enemies, use of hybrid heterosis, plastic mulching and super plastic mulching, and rapid factorization of vegetable seedlings.

As a result of more than 30 years of effort, both cash crop production and scientific farming have reached a certain level. A comparison of 1981 and 1950 yields per unit of area for cash crops that take up cultivated farmland including cotton, oil-bearing crops, sugar crops, hemp [jute and ambari hemp], and tobacco showed increases of 208, 46, 41, 119, and 123 percent, respectively.

Though production of cash crops has definitely grown, it is still very far from meeting the needs of the national economy in all regards. In terms of amounts of cash crop products per capita, China still stands in the rear among the nations of the world. Annually we must import a substantial amount of cotton and sugar. Even in the case of traditional Chinese products such as raw silk and tea, average per capita domestic consumption is next to nothing. Numerous advanced scientific techniques have yet to be applied widely in production; ability to withstand natural disasters is as yet not strong; outputs are not consistent; there is great unevenness from one area to another in yields per unit of area, and the potential for increased yields is very great. Recently the CPC Central Committee proposed a program of "positively no slackening of grain production while actively developing economic diversification." We should set about developing the zoning of agriculture (including economic crops) on the one hand while intensifying plan management, administration and management, and scientific and technical work on the other. Various policies will be further perfected too, and greater development of cash crops will occur.

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## CHINA'S LOCAL COMMUNE MEMBER FAMILY SIDELINE OCCUPATIONS

Beijing ZHONGGUO JINGJI NIANJIAN (1982) [ALMANAC OF CHINA'S ECONOMY (1982)]  
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[Article by Li Bingkun [2621 3521 0981]]

[Text] By China's rural commune member family sideline occupations is meant production activities engaged in by members of rural collective economic organizations outside of collective labor. The basic content of commune member family sideline occupations includes the farming industry, the breeding industry, the handicraft industry, service industries, commodity transportation and sales industries, and other sideline occupations run by commune members as individuals. The major commune member family sideline occupation is the farming of private plots, the growing of fruit trees and bamboo in front of and behind houses and on mountains retained for personal use, the raising of domestic livestock and poultry, the use of water surfaces retained for personal use to raise fish and other aquatic animals, plaiting, sewing, embroidering, services, hauling and selling, and gathering. Both the products and income resulting from commune member family sideline occupations revert to ownership of the producers. China has a plentiful supply of rural labor, but only limited cultivated land resources, and its technical equipment is antiquated. Development of commune member family sideline occupations helps broaden production avenues and makes full use of people's personal skills so that both labor resources and natural resources can be equitably used to create greater material wealth for society while at the same time providing peasants with more cash income. Though family sideline occupations are of many individual kinds, they cannot themselves constitute an independent socioeconomic formation. Under the socialist system, commune member family sideline occupations are a subordinate and necessary supplement to the socialist economy.

"CPC Central Committee Decisions on Various Problems in Hastening Development of Agriculture," which the 3d Plenary Session [of the 11th Party Central Committee] approved in December 1978, and which the 4th Plenary Session formally approved in September 1979, pointed out the following: Commune member household sideline occupations are subordinate to and supplementary to the socialist economy. While assuring consolidation and development of the collective economy, it is necessary to encourage and give support to peasant-operated family sideline occupations, to increase individual income, and to enliven the rural economy. In March 1981 in forwarding a notice on the report from

the State Agricultural Commission on active development of rural economic diversification (i.e. Document 13), the CPC Central Committee and State Council pointed out the following: Contract agreements and other forms should be employed to give active encouragement and support to individual commune member or business partnership in the service trades, handicraft industries, breeding industries, and transportation and sales industries. Anything that lends itself to operation by individual commune members should, insofar as possible, be handled by peasant households, production teams providing organization and assistance. Places not practicing the contracting of production quotas to individual households can adapt general methods to local situations for appropriate expansion of private plots and land for the growing of livestock feed. The maximum area for the two may be 15 percent of a production team's total cultivated land area. Except in the busy seasons for farming, some of the production team's semi-ablebodied or part-time labor and its supplementary workforce may be exempted from doing collective work to devote themselves solely, insofar as they are able, to family sideline occupations (i.e. to permit the existence of what the masses term "privately retained persons"). State departments concerned also formulated special economic regulations to assure that the state would have rules to abide by with regard to active support for the socialist supplementary economy and individual economy.

Prevailing policy with regard to support for rural commune member family sideline occupations is embodied in the following several forms:

1. Increase in Private Plots and Permitting the Existence of Privately Retained People. Farming of private plots is the principal commune member family sideline occupation. Following the Third Plenary Session when commune member private plots were revived, some places designated more land as private plots for commune members. Statistics show 85,577,000 mu of rural commune member private plots nationally in 1978, amounting to 5.7 percent of the country's 1,490,844,000 mu total cultivated land area. By 1980, the private plot area had expanded to 105,553,000 mu, 19,976,000 mu or 23.3 percent more than in 1978, and amounting to 7.1 percent of the country's 1,489,578,000 mu total cultivated land area. After 1981, as a result of the CPC Central Committee and State Council instructions on appropriate expansion of private plots, the national rural private plot area further increased. In Sichuan Province where rural commune private plots occupied about 6.5 percent of the cultivated land area, and where surplus labor runs to between 30 and 50 percent of the total workforce, once the document on appropriate expansion of private plots had been issued, private plots were expanded to within 15 percent of the total cultivated land area. In 1980 the province's rural private plot area amounted to 9,503,000 mu as compared with 6,157,000 mu in 1978, an increase of 3,346,000 mu, or 9.5 percent of the province's 99,822,000 mu total cultivated land area. While increasing the size of commune member private plots, rural collective economic organizations everywhere permitted, as local circumstances allowed, a certain number of privately retained people who devoted themselves solely to family sideline occupations.

In addition, places having the need and requisite conditions designated or increased the amount of mountainland and water surfaces for commune members making them commune member privately retained mountains or privately retained waters to encourage individual commune members to plant trees and raise fish. In Xinjiang, Nei Monggol and such pastoral areas, pertinent policies were also liberalized with respect to herdsmen's privately retained livestock to encourage herdsmen to develop family sideline occupations.

2. Expansion of the Scope of Family Sideline Occupations. Since the Third Plenary Session, all jurisdictions abolished unfair regulations limiting the numbers of hogs, sheep and goats, and fowl that commune member families could raise and the prohibitions against raising large livestock animals. They encouraged vigorous commune member efforts to develop family breeding industries. Not only could they raise the usual barnyard livestock and poultry, but rare animals such as mink that have fairly high economic value as well. Places having requisite conditions could also engage in family raising of fish, culturing of pearls, and such sideline occupations. In farming their private plots, commune members were not restricted in the kinds of crops they planted and, on the basis of market demand, commune members could grow economic crops with a fairly high economic value. Prevailing policies support commune member gathering or introduction to cultivation of wild-growing Chinese medicinal herbs and other wild-growing plants. Encouragement is given commune members to expand plaiting, sewing, embroidering, and such traditional family handicraft industries, and commune members are permitted and helped to sell all family sideline occupation goods surplus to their own needs. This has resulted in fairly rapid revival and development of the tradition of rural commune member family sideline occupations in China. In rural villages everywhere a large number of specialized households and key households engaged in various family sideline occupations have continued to appear. Simultaneously prevailing policies also give active encouragement and support to individual commune members or partnerships in service occupations that provide food and beverages and make repairs. They permit commune members to tramp the streets and the lanes of large- and medium-size cities to make repairs, make furniture, card cotton, and such services. They also permit commune members to conduct the hauling and selling of goods insofar as they are able. After receiving production team approval, and so long as fulfillment of state procurement quotas are not affected, rural commune members may engage in the transportation of agricultural sideline products to markets using shoulder poles, carrying them in their hands, pulling them, or carrying them on bicycles to supplement state commodity flow channels.

3. Rival and Opening of City and Country Farm Markets. Except for the portion sold to state commercial departments, most of remaining commune member family sideline occupation products reach consumers directly through sales in city and country farm markets. In recent years throughout the country rural villages, cities, and towns have continued to revive and open a large number of farm markets. As of the end of 1980, there were more than 37,000 rural markets in the country, and more than 2,900 agricultural sideline product markets in large- and medium-size cities in the country. In 1979 transactions in the country's rural markets amounted to 17 billion yuan, and during 1980 and 1981 the volume of rural market transactions continued to increase. In addition, according to incomplete statistics from 70 large- and medium-size city agricultural sideline products markets, during the first half of 1980 more than 100 different kinds of merchandise reached the markets, and sometimes more than 200 kinds. Among the things going to market were not only grain, edible oil, poultry, meats, eggs, aquatic products, vegetables, fruits, condiments, and such foods that people regularly consume, but also plaited items, embroideries, furs, furniture, flowers, potted miniature trees and rockeries, and such items used in family daily life and for appreciation. Revival and

enlargement of city and country fair markets has both helped promote development of commune member household sideline occupations, but has also helped solve for city and countryside consumers their needs for some agricultural sideline products.

Inasmuch as prevailing policies have aroused the enthusiasm of the broad masses of commune members to engage in family sideline occupations, in recent years fairly rapid development of rural commune member family sideline occupations has taken place, their position and role in the rural economy has strengthened markedly, and they have become an important integral part of peasant life and even the entire national economy.

1. Commune Member Family Farming Industry. With expansion of private plots and increase in scientific farming, corresponding growth took place in output of major crops grown by commune member families. In 1980, grain output from rural commune member family sideline operations amounted to 35.54 billion jin, 27.56 billion jin or 29 percent more than in 1978 and accounting for 5.6 percent of the total national output for 1980 of 636.44 billion jin. Commune member output of cotton from sideline occupations totaled 891,000 dan or 1.6 percent of the 54,134,000 dan national total output. Cotton yields averaged 86 jin per mu as compared with the national average cotton yields of 73 jin per mu, 17.8 percent higher. Output of oil-bearing crops from commune member sideline occupations totaled 13,832,000 dan or 9 percent of the nation's 153,811,000 total output of oil-bearing crops. Yields of oil-bearing crops averaged 161 jin per mu as compared with the national average of 129 jin per mu, 24.8 percent more. In addition to grain, cotton, and oil-bearing crops, the portions of tea, flue-cured tobacco, fruit, and such agricultural sideline products supplied by commune member sideline occupations made up a considerable proportion of the national total output of the same products. In some large- and medium-size suburban areas, fairly rapid development of commune member family vegetable growing also occurred. Growing of fruit trees and bamboo by individual commune members was also a major part of the commune member family farming industry. During the past 2 years, in the campaign for rural tree planting and afforestation, the ratio of tree planting by individual commune members increased. Take Gansu Province, for example. According to incomplete statistics, in 1981 individual commune members throughout the province afforested 186,000 mu of continuous tracts. This was about 20 percent of the area afforested in the province. Individual commune members planted 76 million trees in the "four besides" [beside villages, roads, streams and houses]. This was 54 percent of the total number of trees planted in the "four besides" in the province. In some prefectures, counties, and communes, individual tree plantings for afforestation occupied an important position.

2. Commune Member Family Breeding Industry. Commune member family raising of domestic livestock and poultry as well as production of other livestock products is a substantial proportion of the livestock industry as a whole. During the past few years, this proportion has markedly increased. Take 1980, for example when commune member families raised 276,344,000 hogs, 240,145,000 head or 15.1 percent more than in 1978. The ratio to the total number of hogs raised in the country also increased from 87.7 percent to 90.5 percent. Commune member families raised 86,005,000 sheep and goats, 55,556,000 or 54.8

percent more than in 1978. The ratio to the total number of sheep and goats raised in the country rose from 32.7 percent in 1978 to 45.9 percent. Commune member families raised 8,661,000 oxen or 12.1 percent of the total number of oxen raised in the country. About 90 percent of the country's pork, beef, goat and mutton was provided by commune member family sideline occupations. An overwhelming majority of the country's poultry and fresh eggs was also supplied by commune member household sideline occupations. Commune member family sideline occupations also provided significant amounts of furs, honey, silkworm cocoons, and such products of the breeding industry. Within the commune member family livestock raising industry, in many areas the position and role of specialized households and key households in livestock industry production became of increasing importance. During the past 2 years, in parts of the country having a fairly large amount of water surface for the breeding of aquatic products, commune member family fish raising has also developed. Under centralized planning by production teams, rural villages throughout Jiangsu Province divided up widely scattered water surfaces among commune members for their use in raising fish, the products being consumed or sold by the commune members and the income derived going to commune members themselves. As a result commune member family raising of fish has seen very great development. In 1981 commune member households in the province engaged in raising fish numbered 176,000, using a breeding area of 90,000 mu for an output of about 4,200 tons. Commune member family raising of fish requires no investment by the state; little money has to be spent; care is easy; and benefits are received quickly. In general for each one-tenth mu of water surface, between 2 and 3 yuan is needed to buy fingerlings, and for the feeding of green grass and ox dung to produce between 30 and 40 jin of fish. High yield water surfaces produce as much as more than 100 jin on the same area for an income of several tens of yuan. Commune members everywhere want to raise fish, and the trend is toward continued development. It has been estimated that in 1982 the number of commune member families raising fish will grow to more than 600,000 households.

3. Commune Member Family Handicraft Industries and Other Sideline Occupations. During the past several years more and more peasants in rural villages everywhere have become engaged in family plaiting, sewing, embroidering, stone carving, sculpting, and such production activities to make arts and crafts items and goods used in daily life. This has resulted in the rapid revival and development of traditional family handicraft industries in China's rural villages. Calculated in terms of 1970 constant prices, output value of the country's rural production team and production brigade operated industries was 23,643,000,000 yuan or 14.5 percent of the year's gross output value of agriculture (figured in terms of 1980 prices that was 24,665,000,000 yuan or 11.7 percent of the gross output value of agriculture). A considerable portion of the products were produced by commune member families using spare time provided them by production teams. While the commune member farming industry, breeding industry and handicraft industry were undergoing rapid development, a certain amount of revival and development also occurred in commune member family gathering and other sideline occupations. According to incomplete statistics from 21 provinces, in 1979 wild-growing raw materials for the chemical industry collected around harvest time and sold to state commercial departments amounted to 2,089,000 dan. This was in addition to portions

personally consumed or used. Wild-growing oil-bearing plants totaled 2,673,000 dan; wild growing starch raw materials totaled 5,102,000 dan; wild dry material [e.g. nuts and dried flower buds] and juicy fruits and vegetables totaled 4,068,000 dan, wild-growing fibers totaled 19.5 million dan; wild growing Chinese herbal medicine totaled 4.1 million dan, wild-growing fodder and live-stock feed totaled 5.54 million dan. Plaiting materials of all kinds (supplied to plait baskets) totaled 6,151,000 dan, wild animal pelts totaled 48,463,000 dan, each item approaching or surpassing the all-time records. State purchases during the past several years of "small autumn harvest" items [wild plants and animals collected around harvest time] have had an annual gross purchase value of between 1 and 2 billion yuan. They have provided large quantities of raw materials and commodities for light industrial production, for export, and for markets. By 1980, the output value of other rural sideline occupations (production brigade and production team operated industrial factors eliminated) including gathered materials was 4,212,000,000 yuan or 2.6 percent of the gross output value of agriculture for the year. (If calculated in terms of prices for that year, it would be 5,651,000,000 yuan or 2.7 percent of the gross output value of agriculture for the year), a large portion of the output value of which derived from commune member family sideline occupations.

4. Commune Member Family Sideline Occupations Output Value and Income. As a result of the development of the family farming industry, breeding industry, handicrafts industry, and other sideline industries, in recent years both output value and income derived from China's rural commune member family sideline occupations have increased rather rapidly. Figured in terms of 1970 constant prices, in 1980 output value from rural commune family sideline occupations for the country as a whole was 30,816,000,000 yuan, 7,484,000,000 yuan or 32.1 percent more than 1978's 23.33 billion yuan. This was an average annual increase of 3,743,000,000 yuan and an average annual increase of 14.9 percent. Output value of commune member family sideline occupations as a ratio of the gross output value of agriculture also rose from 16 percent in 1978 to 18.9 percent in 1980. If calculated in terms of 1980 prices, the 1980 output value of rural family sideline occupations for the country as a whole would amount to 41,706,000,000 yuan or 19.8 percent of the national gross output value of agriculture of 210.67 billion yuan, or 19.8 percent for the year. That is to say that about one-fifth of the country's agricultural sideline products were supplied by commune member family sideline occupations. Output value from commune member family sideline occupations in the four provinces of Guizhou, Sichuan, Guangxi, and Hubei amounted to more than one-fourth each of the provinces gross output value from agriculture. In the way of tremendous increases for the previous 2 years, in 1981 commune member family sideline occupation output value for the country as a whole continued fairly considerable increases. In addition to the increase in output value of commune member family sideline occupations, economic income received from family sideline occupations by the broad masses of commune members also increased fairly rapidly. Today income from commune member family sideline occupations generally amounts to more than one-third that of distributions from the collective. In some production teams or peasant households in which family sideline occupations are fairly well developed, income from family sideline occupations approaches or surpasses income derived from collective distributions. A State Statistical Bureau survey of 10,282 commune member households showed average net earnings in



these households derived from family sideline occupations to have been 35.10 yuan in 1978 and 44 yuan in 1979. This was 33.4 and 36.4 percent respectively of total net per capita income for that year. In another survey conducted by the State Statistical Bureau of 15,914 commune member households in 27 provinces, municipalities, and autonomous regions, in 1980 total earnings of these households derived from family sideline occupations came to 7.7 million yuan, 37.3 percent more than in 1979. This was a net per capita income of 62.6 percent derived from family sideline occupations and 42.2 percent more than in 1979. In addition, in rural villages everywhere a group of "outstanding households" who relied on household sideline occupations to become prosperous through labor came into being. For some peasant households, net income derived from family sideline occupations reached 1,000 yuan or even more than several thousand yuan annually. For example, according to incomplete statistics from Changqing County in Shandong Province, 78 households in the county had net earnings of more than 1,500 yuan in 1980 of which 32 households had net earnings of more than 2,000 yuan, 4 households had net earnings of more than 3,000 yuan, 3 households had earnings of more than 4,000 yuan, and 1 household had earnings of more than 5,000 yuan. General increase in commune member family sideline occupation net income has become an important economic source for improvement in the lives of China's broad masses of commune members.

Though China's rural commune member family sideline occupations have developed fairly rapidly during the past several years, overall the present state of commune member family sideline occupations is very much out of kilter with full and rational use of rural labor resources and natural resources. Commune member family sideline occupation development has also been uneven from one place to another, and in some fairly impoverished areas in particular, avenues for commune member participation in family sideline occupations are fairly narrow, correspondingly impairing development of the rural economy and improvement in commune member standards of living in these areas. In quite a few areas, commune member family sideline occupations remain in a virtual natural economic state. The commodity rate for family sideline occupation products is extraordinarily low, and as a result of difficulties in transportation and marketing, some traditional family sideline occupation products have yet to achieve the revival and development they should have had. Looked at in terms of the overall situation, the degree of specialization and socialization of China's rural commune member family sideline occupation production is still very low. In an overwhelming majority of areas throughout the country, communes and brigades have yet to establish a structure for supply of such things as livestock feed for development of commune member family sideline occupations. As a result of certain shortcomings in the agricultural sideline product procurement system, as well as for other reasons, a certain blindness still exists in development of certain family sideline occupation projects. This led to a situation of sometimes high and sometimes low production of some products (such as live hogs). All these problems await continued strengthening of support and guidance for commune member family sideline occupations, and they will be gradually solved in the course of actual future development.

## CHINA'S STATE FARM AND LAND RECLAMATION ENTERPRISES IN 1981

Beijing ZHONGGUO JINGJI NIANJIAN (1982) [ALMANAC OF CHINA'S ECONOMY (1982)]  
in Chinese 1982 pp V 22-V 24

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[Text] In the building of production, in 1981 the national state farm and land reclamation system diligently carried out a program of readjustment, restructuring, reorganization, and upgrading the national economy and, under guidance of state plan, adapted general methods to local situations in a readjustment of production patterns. It took advantage of natural and economic strengths, further instituted the system of taking responsibility for one's own finances and perfected production responsibility systems, engaged actively in economic diversification, promoted advanced scientific techniques, and strengthened political ideological work, for fairly good achievements in the building of production and in administration and management. Despite serious disasters on farms in 15 provinces, municipalities, and autonomous regions, the disaster area covering 29 million mu or 44 percent of the cultivated land area and occasioning very great economic losses, for the state farm and land reclamation system, as a whole profits offset losses and operations continued profitable.

### 1. Agricultural Production

Grain output totaled 12.2 billion jin, 3.1 billion jin less than in 1980. The main reason was that the most serious flooding and waterlogging since founding of the farms occurred in the Heilongjiang state farm and land reclamation area, which accounts for almost one-half the country's state farm and land reclamation system. The afflicted area covered 24 million mu or 80 percent of the cultivated land. On 10 million mu or 34 percent of the cultivated area, crops completely aborted. Though farms in other provinces, municipalities, and autonomous regions reduced by 1 million mu their grain growing area as a result of readjustment of crop patterns, thanks to increase in yields per unit of area total grain output was maintained at the 1980 level.

The cotton growing area was 2.81 million mu, 360,000 mu more than in 1980. Total output was 2.22 million dan, 450,000 dan more than in 1980 for a 25.4 percent increase. Main reasons for increased output were as follows:

(1) increase over last year in yields per mu; (2) some provinces and regions converted to the growing of cotton cultivated land not suited to the growing of grain. One conspicuous example was the Xinjiang state farm and land reclamation area, which readjusted its crop patterns, made the most of advantages for growing cotton, expanded its cottonfields, strengthened management, and thereby increased total cotton output.

The oil-bearing crop area was 3.73 million mu, 360,000 mu more than in 1980. Output totaled 3.16 million dan, a 700,000 dan or 21.1 percent increase over 1980. The main reason for increase in output was expansion of the oil-bearing crop growing area in many provinces.

The sugar crop growing area was 1.06 million mu, a 600,000 mu expansion from 1980. As a result of yield per mu increase of 18.9 percent, gross output totaled 36.08 million dan, 6.86 million dan or 23.5 percent more than in 1980.

State-owned farms everywhere have devoted rather serious attention to afforestation in recent years. In 1981, 1.51 million mu were afforested, 42 mu more than in 1980 for a 38.5 percent increase. [sic] Afforestation in the Heilongjiang state farm and land reclamation area has been rather outstanding. In 1981, 800,000 mu were afforested, 60 percent over plan and with a more than 90 percent survival rate. By the end of 1981, the afforested area in the national state farm and land reclamation system amounted to an accumulated 7.79 million mu.

In 1981 fruit output totaled 5.91 million dan, 590,000 dan or 11.1 percent more than in 1980. Tea output totaled 380,000 dan, 60,000 dan or 18.8 percent more than in 1980.

Dry sheet rubber output totaled 115,200 tons, 8,100 tons or 7.6 percent more than in 1980. This was the result gained by the broad masses of staff and workers in the rubber farm and reclamation area in triumphing over natural disasters, notably a 5-force typhoon in the Guangdong rubber farm and reclamation area that damaged 3 million tappable trees.

As of the end of 1981 milk cows numbered 206,000 head, a slight increase over 1980. Milk output totaled 702 million jin, 53 million jin more than in 1980 for an 8.2 percent increase. Except for individual cities in which the milk shortage was ameliorated, in most cities it continued to satisfy consumer demand. By the end of the year the number of hogs in inventory had declined with only 3.81 million remaining, 180,000 head or 4.5 percent fewer than in 1980. At year's end the number of sheep and goats in inventory had increased to 7.49 million, 450,000 head or 6.4 percent more than in 1980. Output of wool and goat hair reached 29.65 million jin, 660,000 jin more than in 1980 for a 2.3 percent increase. Meat output totaled 523 million jin, 48 million jin or 10.3 percent more than in 1980.

Other products such as ginseng, hops, and aquatic products showed varying decrease or increase.

## 2. Industrial Production

As a result of readjustment, heavy industrial production in 1981 was less than in 1980, but light and textile industry and food industry production rose. Output of major products as compared with 1980 was as follows:

Cotton yarn output was 170,010 jian [0115], an increase of 20,300 jian or 13.6 percent;

Cotton cloth output totaled 125 million meters, a 93,100 meter or 8 percent increase;

Machine-made paper output was 78,200 tons, a 1,600 ton or 2.1 percent increase;

Machine-processed sugar output was 183,000 tons, a 29,700 ton or 19.4 percent increase;

White spirits [usually distilled from sorghum or maize] output was 66,800 tons, a 23.7 percent increase;

Other major products were: edible vegetable oil, 57,800 tons; cement, 523,000 tons; raw coal, 4,165,900 tons; chemical fertilizer, 62,100 tons; and electric power, 536 million kilowatt hours.

Top quality products from state farm and land reclamation industry. According to incomplete statistics from Xinjiang, Jiangxi, Shanghai, Beijing, Jiangsu, Heilongjiang, and Sichuan, 3 products received silver awards for quality from the state between 1979 and 1981 (Xinjiang Pastoral Song Brand national wool gabardine, Heilongjiang Wanda Mountain whole fat milk powder, and Chengdu Golden Phoenix Brand liquid nitrogen biopaks); 3 were designated quality products by departments responsible for them, 6 were designated quality products by the Ministry of State Farms and Land Reclamation, and 38 were designated quality products by provinces, municipalities, and autonomous regions.

## 3. State Farm and Land Reclamation Integrated Agricultural, Industrial and Commercial Enterprises Situation

Very great development has taken place in state farm and land reclamation agricultural, industrial, and commercial enterprises since they were first trial operated in 1979. About half of the farms have participating integrating enterprises. As of the end of 1981 there were 258 integrated enterprises of various kinds. Provinces, municipalities, or autonomous regions that had established either integrated agricultural, industrial, and commercial enterprise companies or supply and marketing companies numbered 25, 5 more than in 1980. Incomplete statistics show a total of more than 5,900 commercial network sites employing 47,000 people and with commodity retail sales of 1 billion yuan. Most integrated enterprises have had marked economic results. Statistics from integrated enterprises in Jiangsu, East Lake and West Lake in Wuhan, Chongqing, Dalian, Hangzhou, Xiaoshan, and Yuhang show a 1.1 fold increase in gross output value of industry and agriculture in 1981 as compared with 1978 before the operation of integrated enterprises. Increase in output value of

agriculture was 80 percent; increase in industrial output value was 170 percent. Both were higher than the speed of increase in industry and agriculture in the state farm and land reclamation system for the same period. Revenue payments to the state increased 70 percent and staff and worker living standards generally improved.

The transformation that occurred in the Xian Municipal State Farm and Land Reclamation Bureau was outstanding. This bureau has only 20,000 mu of cultivated land, and during the 10-year period up until 1979, it required 500,000 yuan annually from local revenues to make up losses. Since operating agricultural, industrial, and commercial integrated enterprises in 1980, it has had profits amounting to 3.69 million yuan for 2 years, which in addition to tax payments has meant a total accumulation of 6.27 million yuan for the state, an average of more than 3 million yuan annually for fairly good economic results.

#### 4. Output Value and Profit and Loss Situation

During 1981, in most areas state-owned farms in the state farm and land reclamation system sustained severe natural disasters yet total output value of industry and agriculture continued to grow reaching 8.61 billion yuan in 1981, 14.6 million or 0.2 percent more than in 1980. For agriculture, output value was 440 million yuan slightly less than in 1980 and amounting to 51.6 percent of the gross output value of agriculture and industry. Output value of industry was 4.17 billion yuan, 350 million yuan more than in 1980 for a 9.2 percent increase.

Though natural disasters were severe in most state farm and land reclamation areas in 1981, after offsetting profits against losses for the state farm and land reclamation system for the country as a whole, profits amounted to more than 200 million yuan. Profit figures were vastly lower than in 1980. The greatest affect was in the Heilongjiang state farm and land reclamation area, where disasters were most severe. That area went from a profit of 360 million yuan in 1980 to losses of 400 million yuan. In the Xinjiang state farm and land reclamation area, which had 12 consecutive years of losses, as a result of promotion of economic responsibility systems, improvement in the conditions of agricultural production, active promotion of the fruits of agricultural science and technology, readjustment of the economic structure, making the most of the region's advantages, and institution of comprehensive agricultural, industrial, and commercial administration losses turned into profits in 1981, the profit amounting to 60 million yuan. For the last 29 years Guizhou Province's state farm and land reclamation enterprises have lost money every year, but in 1981 losses were turned into profits. Though the state farm and land reclamation area in Guangdong Province sustained typhoon attacks, as a result of the launching of economic diversification, profits in 1981 were greater than during the previous year.

Among profit making state farm and land reclamation areas, Jiangsu is fairly outstanding. That province's state farm and land reclamation system has a total of 32 farms and 14 independent industrial enterprises. In 1981 each and every farm and each and every plant showed a profit, and profits for the system as a whole totaled 79.74 million yuan.

In 1981, provinces, municipalities, and autonomous regions having profit-making state farm and land reclamation enterprises numbered 25 (of which 7 provincial and autonomous region state farm and land reclamation departments went from a loss to a profit situation). Four enterprises showed losses. The Heilongjiang state farm and land reclamation area aside, for all other provinces, municipalities and autonomous regions, after offsetting losses against profits for state farm and land reclamation enterprises, profits were 520 million yuan, a 75 percent profit increase as compared with 1980.

The successes of state farm and land reclamation enterprises in 1981 may be attributed principally to efforts in the following areas:

1. Assiduous implementation of the program for national economic readjustment. In 1981 state-owned farms readjusted their crop patterns. In accordance with the state plan, while assuring increases in grain output, they suitably reduced the area of cultivated land not suited to the growing of grain, and expanded some of the economic crop area. Xinjiang's state farm and land reclamation area achieved obvious economic results. During the past 4 years it reduced its grain growing area by 340,000 mu while gross output increased 47 percent. It increased its cotton growing area by 770,000 mu, and gross output increased 3.2 fold.

In accordance with state plan and the adaptation of general methods to local situations, and in accordance with the principle of optimum economic results, adjustments were made in the pattern of kinds of grain crops grown. Along the Chang Jiang in Anhui Province, for example, state farms changed from the growing of paddy rice to the growing of wheat and soybeans, thereby increasing output and earnings.

In accordance with the principle of adapting general methods to local situations adjustments were also made in the pattern of kinds of cash crops grown. In the farms around the lake region in Hunan Province, for example, low yield cotton field areas were reduced in favor of an increase in the sugar cane growing area for a 40 percent expansion in sugar cane fields.

In south China, some state farm and land reclamation areas used hills and slopelands for new development of citrus and pineapple growing. Some state farm and land reclamation areas carried out a reorganization of old orchards to improve production levels.

In the raising of hogs, some state farm and land reclamation areas and farms appropriately readjusted feeding methods dispersing a portion of hogs to be fattened to the homes of staff and workers for raising.

In industry it was mostly readjustment of product structure and the orientation of service. On the basis of market demand, many places shifted the focus of development to the light and textile industries and to the food industry, which use farm and livestock products as raw materials to produce some products to meet demands. In the East Lake and West Lake reclamation area of Hubei Province, the Dongshan Farm Machinery Plant made sure to fulfill its farm machine repair and replacement quotas while at the same time going out

to "search for rice to put into the pot," associating with units concerned to produce parasols and umbrellas turning losses into profits of 250,000 yuan. Following a link-up between the state farm and land reclamation area's textile plant and the Wuhan Municipal Textile Company and changes to the structure of products, profits amounted to 6.57 million yuan. The newly built Sanlian Clothing Plant produced 600,000 suits of clothes while the plant was being built for profits of 1 million yuan in the same year. Enterprises lacking sources for raw materials, having no markets for their products, and that had sustained losses for a long period of time were closed, suspended, merged, or retooled. Statistics from 26 provinces, municipalities, and autonomous regions show a total of 86 enterprises as having been closed, suspended, merged, or retooled in 1981.

2. Active Development of Economic Diversification and Implementation of Integrated Agricultural, Industrial, and Commercial Operations. "One dominant industry and economic diversification" is the operating program of state-owned farms. In 1981 very many state farm and land reclamation areas and farms devoted attention to development of economic diversification. New growth took place in economic crops, local specialties, hops, rabbit raising, marten raising, and the plaiting industry. Farms in Jilin took advantage of local advantages in natural resources to develop production of wood fungus, the bulb of fritillary [*Fritillaria thunbergii*], and the tuber of elevated gastrodia [*Gastrodia elata*]. Liaoning Province developed the raising of rabbits, martens, and the culturing of pearls, all with rather good economic results.

In the area of comprehensive agricultural, industrial, and commercial operations, some state farm and land reclamation areas and farms developed food processing industries and service trades in order to change the situation of simply supplying raw materials and in order to serve the needs of cities and of the state farm and land reclamation area. They gradually shifted away from solely agricultural operations to comprehensive agriculture, industrial, and commercial operations that increased economic benefits. At the Xinjiang state farm and land reclamation area's Kuitun 129 Regiment Farm, income from industry and commerce amounts to 57 percent of total income and profits are more than 3 million yuan.

3. Further Perfection of Production Responsibility Systems. The state-owned farms formerly practiced different forms of production responsibility systems. In 1979 at a state-owned farm administration and management conference convened by the Ministry of State Farms and Land Reclamation at Wuhan, it was decided to institute a system of responsibility of "several fixed and one reward for farm production teams and such grassroots level production units, which stirred initial enthusiasm of enterprises and of staff and workers. Under the impetus of Central Committee Document 75 in 1980, state-owned farms further emancipated their thinking, and adapted general methods to local situations to institute various forms of responsibility systems. Numerous farms and production teams demolished boundary lines for such things as wages, instituting responsibility systems in which calculation of compensation was linked to output. In 1981 new development occurred in state-owned farm systems of responsibility. Their scope was broadened and they developed from agricultural production units to industrial, transportation, construction,

and such entrepreneurial units. In many units, contracting of responsibilities to groups grew to contracting of responsibilities to teams, units, and individuals; the system developed from bonuses for overfulfillment of production to calculation of compensation being linked to output; from fixed wages to variable wages; and from a system of rewards with no penalties to one having both rewards and penalties. Most farms developed from purely worker production responsibility systems to responsibility systems including cadres in the system. The system of taking responsibility for one's own finances on farms also gradually one of taking responsibility level by level and task by task. State farm and land reclamation enterprise production responsibility systems and economic responsibility systems became ever more refined, and they played a positive role in improving levels of farm administration and management, in arousing enterprises and worker enthusiasm for production, in developing production, and in quickening the pace of change from losses to profits.

4. Training of Cadres, Staff and Workers, Promotion of Advanced Production Techniques, and Raising Scientific and Technological Levels. By way of raising cadre and worker management and technical levels, everywhere state farm and land reclamation departments vigorously launched the training of cadres and workers. The Ministry of State Farms and Land Reclamation Science Education Bureau trained a total of 33 leadership cadre from state farm and land reclamation departments and bureaus in provinces, municipalities, and autonomous regions. The Ministry of State Farms and Land Reclamation Cadre School trained 360 principal leadership cadres for farms. Tianjin Municipality trained 500 farm directors, secretaries and vocational cadres. Since 1980, Beijing Municipality used various means to train nearly 10,000 cadres and staff and workers. This amounted to about one-fourth of the total number of staff and workers in that bureau's system.

New developments also took place in 1981 in scientific farming and the promotion of advanced scientific techniques. A general soil survey and application of the results of the survey have been universally promoted; seed work received serious attention, and ground mulching techniques were also promoted. In Xinjiang Province, plastic ground mulch is used over a 20,000 mu area, and has produced yields of 160 jin per mu of ginned cotton. Liaoning and Shandong Provinces have promoted ground mulching for the growing of rice and peanuts with fairly good results. The hog raising industry has increased in out of inventory rate and has cut losses universally.

State farm and land reclamation enterprises had very many achievements in 1981. These have been inseparable from implementation since the 3d Plenary Session of the 11th Party Central Committee of a series of rural programs, policies, and lines, and from improvement of work style and strengthening of political ideology in state farm and land reclamation departments and among farm leadership. Numerous comrades in charge in state farm and land reclamation departments and bureaus have gone down to the grassroots to investigate and study to distinguish situations, and to provide tailored guidance with the result that numerous farms have changed their backward circumstances.

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CSO: 4007/56



## CHINA'S FORESTRY IN 1981

Beijing ZHONGGUO JINGJI NIANJIAN (1982) [ALMANAC OF CHINA'S ECONOMY (1982)]  
in Chinese 1982 pp V 27-V 30

[Article by Forestry Economics Research Institute General Office, Ministry of Forestry]

[Text] In February 1981 the State Council convened the National Forestry Conference, and on 8 March, the CPC Central Committee and the State Council issued "Decisions on Some Questions Pertaining to Protection of Forests and the Development of Forestry." On 13 December the Fourth Session of the Fifth National People's Congress passed "Decisions on Launching an Obligatory Tree Planting Campaign by the Whole People." These actions plus other resolutions by the party and the state and the numerous important directives and memoranda on forestry work from party and state leadership comrades during the past 2 or 3 years has made it possible gradually to cast off the long period of erroneous "leftist" influence in building forestry, and gradually to take a healthy road of development. During 1981 the forestry industry devoted itself mostly to the following several tasks and achieved rather good results.

1. Diligent Implementation of the CPC Central Committee "Decisions" on Forestry and "Decisions on Launching a Voluntary Tree Planting Campaign by the Whole People," a New Situation Coming Into Being in Forestry Work. After the CPC Central Committee "Decisions" were issued, all province, municipality and autonomous region CPC committees and people's governments proceeded to disseminate them widely and to adopt measures linked to local realities to implement them fully, which achieved results. In 1981 the national area afforested was 61,635,000 mu for a 100.2 percent fulfillment of the planned 61.5 million mu. This included afforestation of 8.52 million mu of state-owned land for a 120.9 percent fulfillment of a planned 7.05 million mu. In carrying out afforestation, attention was directed to correcting the unsound former method of caring only for quantity and not for quality. According to statistics from eight major forestry provinces (or regions) and from the Daxing'an Mountain Forestry Bureau, reafforestation in 1981 was 102 percent in fulfillment of plan, with an 86.5 percent average survival rate, which was 3.8 percent higher than in 1980. The reafforested area that met specifications was 76.2 percent of the total reafforested area, 11.8 percent higher than in 1980. In addition, the care and tending of existing forests was improved; quality of tending of young forests was raised, and the tendency

toward only removing timber was reversed. Quite a few provinces and regions took firmly in hand the building of superior variety forest bases and the raising of seedlings.

On 13 December 1981, the Fourth Session of the Fifth National People's Congress passed "Decisions on Launching an Obligatory Tree Planting Campaign by the Whole People" after which all jurisdictions set about the work of implementing the requirements of the decision. By the end of the year, 14 provinces, municipalities, and autonomous regions including Hubei and Henan Provinces had made special studies of obligatory tree planting; and 8 provinces, municipalities, and autonomous regions including Beijing, as well as numerous prefectures and counties set up afforestation committees, preparing the organization, measures, and materials needed for obligatory tree planting by the whole people in 1982.

2. Serious Attention To Stabilizing Mountain Forest Rights, To Designating Privately Retained Mountains, and To Defining "Three Fixeds" Work in a Forestry Production Responsibility System. The "three fixeds" in forestry, are a major policy measure for protecting forests and developing forestry. In order to do this work well, the State Council Office issued the Ministry of Forestry's "Brief Report on Stabilization of Mountain Rights and Forest Rights and Implementation of Forestry Production Responsibility Systems," to give impetus to launching of "three fixeds" work. Sixteen provinces, municipalities, and autonomous regions including Guizhou and Hunan sent out work teams to help the grassroots take a firm grip on implementation of the "three fixeds." Counties (or municipalities) launching "three fixeds" work numbered 1,609, which was 70 percent of the country's counties (and municipalities). Of this total, 803 counties (or municipalities) have the work already fully underway. While stabilizing mountain and forest rights and issuing forest rights certificates, they defined the work to be done in privately retained mountains. Statistics from 22 provinces, municipalities, and autonomous regions show 45.05 million mu of privately retained mountains apportioned to commune members. Throughout the country commune and brigade forest farms established diverse forms or production responsibility systems that fixed responsibilities for a number of years and which were sealed by agreements systems. These clearly spelled out rights, responsibilities, and benefits. Implementation of policies eradicated fears of the masses that policies might change again, and a new atmosphere occurred in which every production team did afforestation and every household planted trees.

2. Further Intensification of Forest Protection Work. In early 1981 inspection organizations at all levels made cases of reckless cutting and denudation of forests the focus of their economic inspection work. Armed with the law, they joined combat with those who broke the "Forest Law," and took commensurate actions, which put a virtual stop to the evil trend toward reckless cutting and denudation of forests. After publication of the central government's forestry "Decisions," and accompanying the launching of the "Three Fixeds," the broad masses of people, acting out of conscious love for and protection of forests, organized a vast and mighty army, which played a tremendous role. At the same time, major forest areas took firmly in hand the establishment and perfection of forestry public security organizations and trained judicial

cadres. As a result of the intensification of forest protection work, not only was the reckless cutting and denudation reduced, but forest fires also declined. Statistics for the first half of the year showed a 33.8 and 4.8 percent respective reduction; from the same period last year in the number of forest fire outbreaks and in the disaster stricken area. In Sichuan and Jilin Provinces, the disaster area was more than 70 percent smaller than in 1980, and no large forest fires occurred in either province. Incomplete statistics show an area of more than 38 million mu over which disease and insect pests have been brought under control.

In order to give existing forest resources time to rest and recuperate, both the amount of timbering and production patterns were readjusted. Timbering plans for 1981 called for the cutting of 1.89 million cubic meters less than in 1980, and state uniform timber allocations were cut by 2.2 million cubic meters. In addition strong attention was given development of new forest areas and old enterprise building of later stage forest farms. In order to form a production capacity with all possible speed, great efforts were devoted to capital construction of forest enterprises, a total investment of 81,959,000 yuan in capital construction having been completed for the year (including 392,772,000 yuan investment by the state) [sic] A new output capacity of 297,500 cubic meters of timber and a 197,000 cubic meter replacement capability were completed. This played a positive role in solving the problem of concentrated overcutting in old enterprises.

The natural reserve was expanded. Statistics show establishment of natural preserve areas in 87 places in 20 provinces including Heilongjiang, Sichuan, Jilin, and Yunnan to protect a 2.3 million hectare area.

4. Active Fulfillment of Production Quotas for Timber and Forest Products. Forestry enterprises enlarged enterprise self-determination and went on to a general promotion of economic responsibility systems. The state instituted a division of responsibility for one's own finances and deduction of a percentage from harvests. Enterprises instituted payment of compensation according to work for staff and workers, and among production teams or between production units and logistics departments, economic agreements systems were instituted with the result that the state received more, enterprises retained more, and individuals got more, which aroused the enthusiasm of the broad masses of staff and workers. For details on the year's timber production see Table 1.

The focus of forest production industries was on all-around use of timber, capital construction, and the tapping of potential, innovation, and restructuring of enterprises, output increasing and quality improving thereby. As a result of vigorous efforts for comprehensive use, in Heilongjiang, the utilization rate for materials left over from felling, sawing lumber, and processing increased 20 percent, so greater amounts of forest products were provided the country, with no increase at all required in the output of timber. Seven of the nine major products of the country's forestry production industry overfulfilled planned quotas. Five of these seven products exceeded 1980 levels. Three of the products obtained national silver awards, and four were evaluated as top quality products by the Ministry of Forestry. An additional number received provincial honors. For details of the forestry production industry see Table 2.

Table 1. National Timber Production Situation, 1981

(1) 单位: 万立方米

	(2) 全部木材产量			(3) 其中: 国家统配材		
	计(4)划	实(5)际	完成计划的%(6)	计(4)划	实(5)际	完成计划的%(6)
(6a) 全国总计	4,698	4,942.00	105.2	3,732	3,833.19	102.7
(7) 其中:						
(8) 内蒙古	370	427.00	115.4	340	342.00	105.9
(9) 吉林	518	614.00	118.5	420	422.00	100.5
(10) 黑龙江	1,502	1,540.00	102.5	1,317	1,321.00	100.3
(11) 浙江	50	64.00	128.0	50	48.60	97.2
(12) 安徽	43	36.00	83.7	28	26.56	94.8
(13) 福建	350	367.00	104.8	283	283.00	100.0
(14) 江西	238	270.00	113.4	188	237.37	126.3
(15) 湖北	67	65.00	97.0	45	47.02	104.5
(16) 湖南	249	208.00	83.5	170	198.71	116.9
(17) 广东	290	327.00	112.7	170	159.19	93.6
(18) 广西	176	160.00	90.9	120	110.00	91.6
(19) 四川	318	344.00	108.2	265	261.12	98.5
(20) 贵州	78	83.07	106.5	60	79.00	131.6
(21) 云南	215	200.00	93.0	170	187.10	110.1
(22) 西藏	24	18.76	78.2	19	16.76	88.2
(23) 陕西	42	33.00	78.5	18	22.90	127.2
(24) 甘肃	42	45.00	107.1	25	24.79	99.2
(25) 新疆	40	51.92	129.8	40	38.00	95.0

(26) 注: 黑龙江省木材产量中包括大兴安岭林管局的产量。

## Key:

- |                                      |                                    |
|--------------------------------------|------------------------------------|
| (1) Units: 10,000 cubic meters       | (15) Hubei                         |
| (2) Total timber output              | (16) Hunan                         |
| (3) Including state allocated timber | (17) Guangdong                     |
| (4) Plan                             | (18) Guangxi                       |
| (5) Actual                           | (19) Sichuan                       |
| (6) Percent fulfillment of plan      | (20) Guizhou                       |
| (6a) National total                  | (21) Yunnan                        |
| (7) Including                        | (22) Tibet                         |
| (8) Nei Monggol                      | (23) Shaanxi                       |
| (9) Jilin                            | (24) Gansu                         |
| (10) Heilongjiang                    | (25) Xinjiang                      |
| (11) Zhejiang                        | (26) Note: Heilongjiang Province's |
| (12) Anhui                           | timber output includes output      |
| (13) Fujian                          | from the Daxing'an Mountain        |
| (14) Jiangxi                         | Forest Bureau                      |

Table 2. National Forestry Production Industrial Production Situation, 1981

	(1) 单 位	(2) 年 完 成 数	(3) 为年计划的%	(4) 为1980年的%
(5) 胶合板	(15) 万立方米	35.11	123.6	122.4
(6) 纤维板	(15) 万立方米	56.83	128.6	128.1
(7) 刨花板	(15) 万立方米	7.63	156.5	191.3
(8) 栲 胶	(16) 吨	40,159.00	153.8	110.6
(9) 紫 胶	(16) 吨	1,094.80	72.9	
(10) 锯 材	(15) 万立方米	1,301.00		
(11) 松 香	(16) 吨	406,214.00	154.4	124.1
(12) 松节油	(16) 吨	67,354.00	133.9	
(13) 松 脂	(15) 万担	1,124.00	134.3	

(14) 锯材国家没下达计划指标, 林业部门年计划均488万立方米。

## Key:

- |                                      |   |
|--------------------------------------|---|
| (1) Units                            | (11) Rosin  |
| (2) Fulfillment figures for the year | (12) Turpentine   |
| (3) As a percent of annual plan      | (13) Resin  |
| (4) As a percent of 1980             | (14) Note: No plan quotas from state for sawed lumber; Ministry of Forestry annual plan of 4.4 million cubic meters |
| (5) Plywood                          | (15) 10,000 cubic meters  |
| (6) Fiberboard                       | (16) Tons   |
| (7) Particle board                   |   |
| (8) Tannin extract                   |   |
| (9) Shellac                          |   |
| (10) Sawn lumber                     |   |

In 1981 the major problems existing in forestry construction were the following: Enterprises in some forest areas had not fulfilled their afforestation, lumber, and forest industry production plans, poor quality of afforestation continued; and in individual places the supply of seedlings was inadequate, hurting progress in afforestation and fulfillment of quotas. Cutting of forests outside of plan had not been effectively brought under control. Building of new forest areas and follow-on forest farms did not keep up with demand, and overcutting in old forestry bureaus had not been fundamentally solved. Channels for investment of funds in medium age and young forest care were clogged. Readjustment of the management system and the product mix as well as arrangements for economic responsibility systems were only just beginning. Further summarization of experiences, constant improvement and perfection were necessary. Fundamental forestry was weak causing definite difficulties for doing a job.

China's forestry industry is just getting underway and future forestry building tasks will be very heavy. In 1982 it will be necessary to continue to devote attention to obligatory planting of trees by the whole people, to stabilization of mountain and forest rights, to reorganization of forestry enterprises, to readjustment of timber output, to fundamental forestry work, to readjustment of the pattern of afforestation and of the composition of forests, and to strengthening of the legal system.

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CSO: 4007/56

## CHINA'S FISHERY INDUSTRY IN 1981

Beijing ZHONGGUO JINGJI NIANJIAN (1982) [ALMANAC OF CHINA'S ECONOMY (1982)]  
in Chinese 1982 pp V 30-V 31

[Article by Yu Zhenyan [0060 2182 6056]]

[Text] Acting in accordance with the national economic readjustment program and the system's realities, the aquatic products sector continued to carry out "equitable use of resources, vigorous development of breeding, and emphasis on improved quality as the focus of its readjustment work, achieving obvious results thereby."

Preliminary statistics show a gross national output of aquatic products in 1981 of 4,605,000 tons, 214 percent more than in 1980. This included marine catches of 2,774,000 tons, down 1.4 percent; marine breeding of 458,000 tons, up 3.2 percent; freshwater catches of 358,000 tons, up 6 percent; and freshwater breeding of 1,015,000 tons, up 12.7 percent. Products bred as a ratio of total aquatic products rose from 30 percent in 1980 to 32 percent in 1981, and actual results achieved substantially met forecast requirements.

1. Further Clarified and Readjusted Guiding Ideas and Conspicuous Emphasis on Development of the Breeding Industry. Accompanying the establishment and perfection of agricultural production responsibility systems was an arousal of enthusiasm for production among the broad peasant masses, and new avenues of production for resulting surplus workforce were required. Inasmuch as China is a country with large population relative to arable land in which water surfaces have not been used to the full, and which contain a tremendous potential, but where development of economic diversification cannot take over cultivated land, emphasis has to be placed on making the most of the potential that water surfaces and shallows provide for rapid development of an aquatic products breeding industry.

Because the guiding ideas are fairly clear, more and more serious attention given breeding work, and water surfaces used for breeding steadily expanded, output has increased fairly rapidly. In 1981 freshwater surfaces used for the rearing of fish covered more than 2 million mu more than in 1978 and 200,000 mu more than even in 1980. The state has given support to the building of an accumulated total of 400,000 mu of freshwater commodity fish bases where both outputs and amounts surrendered to the state have more than doubled over 1980.

Commune and brigade rearing of fish has developed rapidly, the annual output of freshwater fish from 30-odd counties in the country surpassing 5,000 tons. According to incomplete statistics from Hunan, Hubei, Jiangsu, Anhui, Jiangxi, Zhejiang, and Guangdong Provinces on commune member family fish raising, more than 1.3 million households are now involved in rearing fish on more than 360,000 mu of water surfaces. The marine breeding area also increased by 200,000 mu (10 percent) over 1980. Aside from the mainstay shellfish and aquatic plant varieties, the ratio of fish and shrimp breeding has increased. An overwhelming majority of areas are self-sufficient in the supply of prawn larvae. New growth also took place in the artificial breeding and increasing breeding of scallops, beche-de-mer, abalone, and such treasures of the sea, and the breeding area for them is now larger than 2,000 mu.

2. Steady Improvement in Collective Marine Fishing Industry Production Responsibility Systems. Following the 3d Plenary Session of the 11th Party Central Committee, coastal fishing areas and party and government leaders at all levels diligently carried into effect a series of programs and policies of the central authorities, universally establishing and gradually perfecting fishing industry responsibility systems. By 1981 more than 90 percent of coastal fishing industry communes and brigades had established various forms of responsibility systems. Basic accounting units practicing "several fixeds with rewards and penalties" numbered 23.8 percent; those practicing "proportional division" numbered 7 percent; and those practicing "assignment of sole responsibility for task completion" numbered 57.5 percent (though the proportion of those practicing "several fixeds with rewards and penalties" was relatively low, because most of those practicing this responsibility system had a fairly large workforce and fairly large amounts of aquatic products, and were units with a fairly large scale of production, their output held a major position in the marine fishing industry as a whole). This played a major role in stirring fisherman enthusiasm for production. However, since the marine fishing industry differs from agriculture, and particularly because of the current decline in resources, shortages of energy, surplus labor, a drop in economic benefits, and such real problems, institution of production responsibility systems had to be given full consideration.

After investigating and studying, all jurisdictions analyzed the marine fishing industry's main characteristics as follows: (1) large investment required, high costs, large risks, and uncertain harvests; (2) fairly large amounts of equipment and facilities required, fairly high degree of mechanization, specialization, collectivization, and socialization requiring that production be of a certain scale; (3) production benefits reflected within a fairly short period of time, and very apparent relationship between worker skill and work results; but because of limitations imposed by changing resources, consumption of labor and materials frequently are not in direct proportion to increase or decrease in production results; (4) the basic means of production of marine fishing are ships, nets, implements, and shore facilities, and of these the most important is ships, which not only can be bought and sold but whose value in the process of use steadily converts into product. If withholdings are insufficient and repairs not made on time, their sudden loss would mean inability to carry on production, so the collective economy could not be readily consolidated; (5) products may be sold any place at any time, and when a great difference

exists between list prices and market prices, unless there is strict control a situation can develop of "selling fish off the bow of the boat and dividing money at the stern," "no record existing once the money has changed hands," "concurrent concern for the three" [country, collective, and commune members] becoming an empty phrase.

In accordance with the pertinent spirit of the central authorities together with the aforestated characteristics, all jurisdictions believed that when the collective marine fishing industry instituted production responsibility systems, attention would have to be given the following points; First, adherence to the socialist collective path, most importantly adherence to public ownership of basic means of production, guarding against "eating the decks," dividing up equipment, "breaking of wholes into parts," or making what is publicly owned privately owned. Second is adherence to centralized administration (i.e. centralized planning, centralized accounting, and centralized assignment of workforces) on the principle of distributions according to work. Basic accounting units should not be overly small, in general a single ship should not be a basic accounting unit; contracting units should not be overly large, generally contracting should be done to vocational units. Third is adherence to the principles of adapting general methods to local situations, adapting methods to specific times, adapting methods to specific vocations, and giving tailored guidance, allowing various forms to coexist, and no practice of "arbitrary uniformity." Even within a single commune or production brigade various forms of production responsibility systems may be adopted. Fourth is adherence to the principle of concurrent concern for the country, the collective and commune members individually, the key being practice of a distribution of benefits, strengthening of control over products, and fiscal control. Fifth, in view of the special circumstances of decline in resources and an energy shortage, in setting norms for "fixeds, contracting, rewards, and penalties, serious attention should be given quality and costs, with no pursuit of quantity solely.

The aforementioned points have played and will continue to play a positive role in the daily improvement in production responsibility systems in the collective marine fishing industry.

3. Readjustment and Implementation of Aquatic Products Procurement and Marketing Policies. During May, the State Aquatic Products Administration and departments concerned came to an agreement that was approved by the State Council for readjustment of aquatic products procurement and marketing policies. Most important was readjustment of the scope of assigned procurement and assigned procurement proportions. During 1979 and 1980, aquatic products were classified as Category II products for which the general assigned procurement proportion was 60 percent. In 1981, only large yellow croakers, small yellow croakers, hairtails, squid and a total of 21 varieties of marine products were classified in Category II. The state instituted assignment procurement for Category II products, for aquatic product breeding commodity bases that had been supported by state investments, and for products from specialized communes and brigades in concentrated freshwater fish areas. Except for one variety, all of which the state purchased, for the other 20 varieties the assigned procurement proportion was 60 percent. For bases breeding commodity products and for specialized commune and brigade freshwater fish, the assigned



procurement proportion was no less than 50 percent. Products remaining after satisfaction of assigned procurement quotas, all Category III products, and products derived from commune and brigade raising of fish as sideline occupations generally (not commodity fish bases and nonspecialized communes and brigades) could be disposed of by communes and brigades as they pleased. In addition was adoption of required administrative and economic measures such as emphasizing that "aquatic products must be administered by the aquatic product supply and marketing departments concerned," and maximum limits set for negotiated prices (not including negotiated prices at country fair markets); linking of fish to materials, by which was meant that the state would designate a certain proportion of major materials needed by the fishing industry, the amount being linked to assigned procurement quotas, the more fish turned over to the state the greater the supply of materials, and the less turned over to the state the less supplied. In procurement of products that had been bred, a system of return supply of feed was instituted. The feed was supplied on the principle of whoever did the procuring provided the grain, and whichever level delivered the fish takes the grain. These measures helped stir commune and brigade enthusiasm for selling aquatic products to the state; they helped market and product control, and they helped the correct handling of the relationship among the country, the collective, and individual commune members.

4. Clarification of Aquatic Product Science and Technology Programs and Policies, and Proposing the Emphasis of Current Work. Since founding of the People's Republic, and particularly during the past several years, considerable development has taken place in China's scientific and technical endeavors in the field of aquatic products. According to incomplete statistics for 1981, there were 107 research organizations in the country above the prefecture level employing more than 7,000 staff and workers, more than 2,700 of whom were scientists and technicians. When personnel in institutions of higher learning, enterprises, and composite scientific research organizations engaged in research on aquatic products are added to this number, this amounts to a fairly large size corps. China also has more than 520 aquatic products technical promotion stations employing more than 5,000 people, more than 2,000 of whom are scientific and technical personnel. Scientific and technical results reported to the National Aquatic Products Administration during the past 3 years number 183, 120 of which have been certified and evaluated.

In 1981, aquatic products departments summarized major achievements and the lessons of experience in aquatic products scientific and technical work since founding of the People's Republic and went on to propose a program for development of aquatic products science and technology and technical policies for some time to come, and the current work emphasis.

Aquatic products scientific and technical development program: Aquatic products science and technology serves construction of the fishing industry economy and is in concert with economic and social development. It is closely related to the focus of readjustment of aquatic products work. It applies research and development of research primarily, correspondingly strengthens applied and basic research, vigorously develops technical promotion and the popularization, and raises with all possible speed the levels of science and technology so as to hasten modernization of the fishing industry.

## CHINA'S ANIMAL HUSBANDRY IN 1981

Beijing ZHONGGUO JINGJI NIANJIAN (1982) [ALMANAC OF CHINA'S ECONOMY (1982)]  
in Chinese 1982 pp V 34-V 36

[Article by Zheng Xingjie [6774 2502 2638], Ministry of Agriculture]

[Text] 1. New Situation in Development of Animal Husbandry

The year 1981 was one in which China's animal husbandry made steady progress. During this year, while in process of readjustment of the national economy, government at all levels made development of animal husbandry an important integral part of the development of socialist large-scale agriculture, further put into effect pertinent lines, programs, policies, and measures, and achieved remarkable results.

(1) Tremendous Increases in All Categories of Animal Husbandry Products. In 1981, the number of hogs, sheep and goats, and large livestock animals in inventory at year's end remained steady at the 580 million head of 1980, and the year's total output of pork, beef, mutton, and goat continued to rise from the 12,055,000 tons of 1980 to 12,609,000 tons, 554,000 tons or 4.6 percent more than in 1980. This included 11,885,000 tons of pork, an increase by 545,000 tons or 4.8 percent; 473,000 tons of mutton and goat, a 6.3 percent increase; and 249,000 tons of beef, a 7.4 percent decrease. Since pork comprised the greatest proportion of the total, amounting to 94.3 percent, with mutton and goat amounting to 3.7 percent and beef only 2 percent, the meat supply currently continues to depend largely on the hog raising industry.

China's milk livestock industry has a weak foundation, the number of milk cows and milk goats being relatively small. It is still in a preliminary stage. In 1981 output of cows and goats milk totaled somewhat more than 1.55 million tons, up 13.3 percent from 1980, and included 1,292,000 tons of cows milk and 258,000 tons of goats milk. Cows milk is produced principally in pastoral areas and in large and medium size cities; and goats milk is produced mostly in some of the plains areas of 10-odd provinces. Among all herbivorous animals, milk cows and milk goats have begun to attract the serious attention of animal husbandry departments at all levels and of peasants and herdsmen. The area in which they are raised has expanded, the number of households that raise them has increased, the number of milk animals has steadily increased, and milk output has gradually risen.

Except for meat, wool is the staple livestock commodity produced in China. In 1981 the number of sheep in inventory in China showed a net increase of 2.7 percent and produced 189,000 tons of wool, 7.6 percent more than in 1980. Development of wool production has made a positive contribution in steadily increasing the source of raw materials for rapid development of China's woollen textile industry.

During the past several years the number of bee colonies in the rapidly developing beekeeping industry, and the amount of honey produced have steadily increased. In 1981, 6,335,000 hives of bees were raised and produced 110,000 tons of honey. This was a 7.7 and 14.6 percent increase over 1980. In a single year more than 80,000 tons of honey were purchased by the state, more than 50 percent more than for several years prior to the Third Plenary Session.

In addition, output and commodity output of fresh eggs needed to improve the people's standard of living, and exports of traditional animal husbandry products such as goat hides, and rabbit fur increased noticeably. China holds first place today in international trade in the quantity of its exports of hog bristles, hog casings, down, cashmere, rabbit fur, rabbit meat, and honey.

(2) Commune Member Family Livestock Raising Industries Have Had Very Great Development and a Number of Livestock and Poultry Raising Specialized Households and Key Households Have Appeared. As a result of readjustment policies, which have encouraged commune members to develop family livestock raising industries, in 1981 commune member family hog raising accounted for 94.1 percent of all hogs in inventory in the country (in 1980, it was 90.5 percent; and in 1978, 80 percent). In 1981 sheep and goats raised by commune members accounted for 54 percent of the sheep and goats in inventory in the country (in 1980, it was 46 percent; and in 1978, 33 percent). Commune member raising of cattle has developed most rapidly. Up until 1978, cattle raised by commune members in farming and pastoral areas numbered fewer than 5 percent of the total in inventory. In 1980 the number had grown to 12 percent; and in 1981, the number was 21.37 million head or 29.1 percent. Following a general development of the commune member family livestock raising industry, some peasant households possessing requisite skills gradually moved from engaging in the raising of livestock as a family sideline occupation to the specialized raising of livestock, changed from extensive operations to intensive operations, and changed from production for self-sufficiency to commodity production in the beginning of a march along the road of specialization, socialization, and commodity production, their production efficiency steadily rising. According to incomplete statistics from the three provinces of Heilongjiang, Liaoning, and Gansu, currently there are 97,162 households specializing in the raising of livestock, and 383,608 key households that serve as a reserve army to the specialized households. Statistics from the almost 100,000 households specialized in the raising of livestock show that, on average, a specialized household raises the following numbers of livestock and poultry: 7 oxen, 2 milk cows, 30 sheep or goats, 11 hogs, 80 chickens, 40 rabbits, and 30 geese. As compared with the raising of livestock by households as a sideline occupation, their labor productivity rate is from several times to between 10 and 20 times higher.

(3) Gave Impetus to Animal Husbandry Production Responsibility Systems and Consolidated the State-Owned and Collective Economy. After various forms of production responsibility systems were instituted through the adaptation of general methods to specific situations in the raising of livestock and poultry, this solved, in varying degrees, the bad situation of eating "out of a large common pot." Cadres and the masses were of one mind in their concern about economic accounting, giving attention to economic results, and in improving production efficiency so that numerous production in numerous livestock and poultry farms got on the right track, the work became daily more flourishing, outputs rose, quality improved, costs declined, and losses turned into profits. Because individuals got more, the collective earned more, and the public treasury collected more, the collective animal husbandry economy, state-owned livestock breeding farms, and livestock farms were consolidated and developed. Since 1980 gross output value of the country's stud farms has doubled, and losses have declined 60 percent. Today almost half the country's livestock farms have turned losses into profits. In Shanghai there are 32,000 milk cows, half of them on state-owned milk farms and 40 percent of them on collective milk cow farms. The country's herds of high yield milk cows are distributed mostly on state-owned farms and collective milk cow farms in Beijing and Shanghai. In Beijing, each adult cow produces 6,200 jin of milk annually. These farms annually show a profit. The country has a group of superior milk cows that produce almost 10,000 jin of milk per pregnancy and whose milk output over the course of their lives totals nearly 100,000 jin. These are also distributed on state-owned milk cow farms in the three large- and medium-size cities of Beijing, Shanghai and Nanjing.

More than 10 million hogs are being raised collectively in the country at the present time. As a result of the promotion of livestock industry production responsibility systems, in the Shanghai suburbs, 26,405 collective hog-raising farms have been consolidated. On 80 percent of the farms, production responsibility systems were implemented in 1981. In Beijing 75.5 percent of collective livestock and poultry farms established specialized contracting. Production responsibility systems linking output to calculation of compensation honored on time numbered 76.9 percent. In 1981, collective farms turned over to the state 10.83 million jin of fresh eggs, 11.1 percent more than in 1980. State-owned farms turned over to the state 20.95 million jin, 44.9 percent more than in 1980. State-owned farms and collective farms turned over a total of 3,178,000 jin, 8 million more than the 23.77 million jin turned over by commune members, making it the chief supplier of fresh eggs to urban residents.

(4) Substantial Development of Animal Husbandry Science and Technology Promotion and Popularization Work; Preliminary Results Seen in Animal Husbandry Economic Planning and Management. Accompanying implementation of livestock industry production responsibility systems and development of commune member family livestock raising has been an ever increasingly conscious study by peasants and herdsmen of animal husbandry science and technology, and the increasingly scientific selection of livestock and poultry varieties, hay crops, blending of feeds, prevention of epidemic diseases, etc. The special training courses run by various departments at all levels in animal husbandry, pastures, stud livestock, veterinary medicine, livestock machinery, and finance and accounting have been universally welcomed by cadres and the masses. In 1981,

255 training courses of various kinds attended by 8,645 students were run in 20 provinces, municipalities and autonomous regions. Almost 20 training courses were either run by the Ministry of Agriculture's Animal Husbandry Bureau or entrusted by them to pertinent departments regionally. Among leaders and the masses in some rural villages and pastoral areas, a group of skilled hands or "native experts" versed in the scientific raising of livestock and poultry came to the fore by dint of training, practice, or intensive study.

As a result of the greater self-determination in production obtained by peasants and herdsmen within requirements of centralized state planning, the tendency in livestock production to seek only numbers of livestock in inventory without regard to increase in end products was reversed. In hog production, the removal from inventory rate increased, and the trend was toward a sensible average slaughtering weight and an increase in total meat output. During the past 3 years, the number of live hogs in inventory has stabilized at around 300 million head. The average weight of live hogs purchased by the state has risen from 75 kilograms to 90 kilograms, an annual 5 kilogram per year increase to reach a 90 to 100 kilogram sensible butchering weight. Pork output has increased 47.2 percent in the last 3 years. Average pork consumption in the country's cities and countryside increased from 15.4 jin annually in 1978 to 22.2 jin in 1981, a 44 percent increase.

(5) New Developments in the Growing of Grass To Raise Livestock. During the past several years, with readjustment of the national economy and increasingly pressing demand for meat, milk, furs, skins, and such livestock products, enthusiasm on the part of all nationalities of peasants and herdsmen for development of herbivorous livestock has become increasingly great. Leaders at all levels have gradually come to give serious attention to protection, use, and building of pastureland resources.

As of now a general survey of grasslands has been completed in 363 of the nation's counties. In some provinces and regions in south China, a group of continuous tract grassy mountains and grassy slopes of economic utility have been discovered one after another. In the southwestern part of Xinning County in Hunan Province alone, a natural range 100 kilometers long and covering an area of 600,000 mu has been discovered. In Wutai County in Shanxi Province, an uninterrupted strip of grassy mountains and grassy slopes covering 1.96 million mu was discovered, which makes a fine place both for tourism and a fine natural pastureland as well. China has abundant pasture grass resources, varieties of pasture grasses numbering 10,000. These resources will be designated for farming and livestock industry zoning to provide further scientific data for development of a grassland animal husbandry industry.

The pastoral and farming area on which grass has been planted or on which pasturelands have been improved covers an area of more than 32 million mu, and 60 million mu of range has been enclosed. In most provinces and regions, selective breeding has resulted in preliminary location of grass varieties comparatively suitable for specific local areas.

In order to gain experience with the Chinese style modernization of grasslands on different kinds of prairies and mountain areas, during the past several

years the Ministry of Agriculture's Animal Husbandry Bureau has worked together with more than 10 provinces and regions to build 18 grasslands. They have run modernized livestock industry pilot projects and more than 40 pilot projects in the aerial sowing of pasturelands. These pilot projects included a total of 710 communes, farms, and brigades. Most pilot projects are in a fledgling stage; they have a certain production capacity, and they have begun to provide benefits, and they have played a definite role in providing demonstrations and giving impetus in the areas where they are located.

Fairly remarkable results have been derived from the introduction of foreign technology and capital to set up three demonstration farms, improve grasslands, and increase production capacity in Wengniute Banner in Nei Monggol, at Chengbu County in Hunan, and in Qianjiang County in Guangxi.

(6) Remarkable Results in Animal Husbandry Industry, Use of Multiple Channels for Operations. By way of correctly handling the relationship between production and marketing, and to enliven the livestock industry economy, in the process of developing the animal husbandry industry, many places have used multiple channels for live animals and livestock products that have few links. As a result of long experience, during the past 1 or 2 years, breakthroughs have been made and promotion of these methods has expanded. Some places have begun to set up pilot projects from which they have derived remarkable results.

In the field of multiple channels for livestock products, the most longstanding practice has been a direct exchange of sheep's wool from herdsman to plant, i.e. wool textile plants form direct links with units producing the sheep wool. A pilot project using this method was set up in 1964 and has been operating for many years. Its advantages are as follows: First, it reduces the intermediate commercial flow links. Except for payment of taxes, it saves expenses involved in business flow and accords with the principle of benefits for both herdsmen and plants. Second, it basically achieves a premium price for premium wool and premium use of premium wool, which helps improve wool quality. Today there are 72 large livestock farms, study farms, and people's communes in the country that annually pack more than 10,000 tons of sheep wool, which following inspection and acceptance, is sent directly to industrial plants, a practice that has been generally well received.

Animal husbandry veterinary station and agricultural enterprise unit operation of live hog procurement and marketing has been a new development in live hog production in provinces and regions during the past 1 or 2 years. Certain plains and hill regions are frequently areas in which fattened hogs are concentrated. During the past 1 or 2 years, the growing of hogs has developed very quickly and as soon as the busy season in removal of hogs from inventory arrives, the state is limited in the number it can buy, and the peasants hurriedly seek help in finding markets for their hogs. In the suburbs of Chengdu and Chongqing some commune animal husbandry veterinary stations, agricultural institutes, and commune and brigade enterprises that share the peasants' anxieties operated slaughter houses, which would act as agents either for slaughtering or for sales, or else would directly purchase and market hogs. This was a good way in which to actively expand pork sales. The new forms of multiple channels for production, purchases, and sales of live hogs has forced livestock production departments to institute systems reforms. The Sichuan

Provincial Animal Husbandry Bureau has already established an enterprise-style provincial animal husbandry industry service company with pilot projects in Chengdu and Chongqing, which mostly market pork.

## 2. Outlook for Development of China's Livestock Industry and Major Policy Measures

(1) Good Outlook for Development. Meat Production: During the past 3 years, China's total output of pork, beef, mutton and goat has increased from 8.56 million tons to 12,609,000 tons, a 4,409,000 ton or average annual 16 percent increase. This amounts to an average 1.5 jin increase per person per year. It is estimated that by 1985 meat output will average 25.2 jin per person, an annual per capita increase of about 1 jin of meat.

Wool and Hides: As a result of brisk sales of manufactures, the light and textile industries have demanded accelerated production of raw materials. In the case of wool fabrics, for example, the textile industry has concentrated forces in an effort to double its production capacity within 5 years, and needs are extraordinarily urgent for raw materials from which to make rugs and leather. In addition to bringing in materials from outside the country for processing in the use of imports to sustain exports for partial solution to the problem, efforts will be made to increase wool output to keep pace with an annual 10 percent increase in capacity of the wool textile industry. For output of cow-hides, sheepskin, and pigskin, with promotion of sheep production, earlier fattening of cattle and sheep, and acceleration of livestock and poultry turnover with increase in the removal from inventory rate, substantial increase will also occur in leather production.

(2) Opening of Fodder Grass and Livestock Feed Resources: Promotion of Scientific Livestock Raising Methods. In the field of using and building grasslands, most important at the present time is implementation of use rights for grasslands to bring into play the enthusiasm of the country, the collective and individual commune members, and to do a good job of taking care of, building, and using grasslands. For example, the Nei Monggol Autonomous Region has already publicly announced placing ownership rights for pasturelands in the hands of agricultural and livestock farms, and in the hands of people's commune basic accounting units, and placing use rights in the hands of vocational teams and specialized households for a long period of time without change. Some places have also assigned commune members a certain amount of privately retained mountains or privately retained slopes to encourage commune members to grow grass to feed livestock. Planned organization of the sowing of grass can be done for large grassy mountain and grassy slope areas, general methods adapted to local situations for machine sowing, aerial sowing, or scatter sowing of high yield superior quality pulse and grass family pasturelands. The animal husbandry sector has to continue to do a good job in its work of promoting propagation of fine pasture grass seeds, and to have some institutions of higher learning and scientific research units using a combination of teaching, research and production to set up a group of experimental bases on the introduction and propagation of vine varieties of pasture grasses. They should domesticate, introduce to cultivation, and breed the several hundreds of varieties of grasses that grow wild in China and the fine varieties of pasture

grasses introduced from abroad. In addition, they should develop in a planned way use of agricultural sideline products and various fodder resources to produce mixed livestock feeds, development of the livestock feed industry giving impetus to a benign cycle in large scale agriculture.

(3) Processing of Pulverized Leaves To Develop the Animal Husbandry Industry. China is blessed with an abundance of tree varieties; statistics show 7,500 different varieties. Numerous kinds of tree leaves are very good sources of livestock feed. Analysis shows a more than 20 percent crude protein content in false indigo leaves, locust leaves, oak leaves, elm leaves, and banana leaves. This is double the protein content of wheat. For other tree leaves such as peach, apple, apricot, and pear, the crude protein content is higher than 10 percent. Acorns also make a fine source of livestock feed. Annually the forests produce more than 2 billion jin of leaves, which if collected, ground up, and made into a liquor, and fed to livestock in a trough, would promote fattening because of the high starch content. China has abundant pine forests, and use of pine needles for livestock feed for the fattening of livestock and poultry also produces marked results.

(4) Tapping of the Full Potential of Superior Livestock and Poultry Variety Resources. China has an extremely abundant supply of livestock and poultry varieties, which are a huge "storehouse of genes." According to a preliminary survey made in various places, there are more than 389 local varieties in the country, including 153 varieties of hogs. These varieties have come into being as a result of longstanding ecological conditions and artificial selection. Quite a few varieties have an economic value known throughout the world, and they have made a major contribution to development of the world's livestock industry. We should proceed on this basis to diligent summarization of experiences, further perfect the superior variety breeding and promotion system, and do a genuinely good job of improving livestock and poultry species.

9432

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## CHINA'S TEXTILE INDUSTRY

Beijing ZHONGGUO JINGJI NIANJIAN (1982) [ALMANAC OF CHINA'S ECONOMY (1982)]  
in Chinese 1982 pp V 88-V 92

[Article by Research Office, Ministry of the Textile Industry]

[Excerpts] In 1981 the textile industry front conscientiously implemented the Central Committee's major decisions regarding further readjustment of the economy and further political stability, made steady advances in readjustment, and achieved rather good results in all work.

### Textile Production Continues Rapid Expansion

At the beginning of the year the textile industry system planned to expand gross output value by 8 percent over the previous year and to strive for an increase of 10 percent; the final results which it achieved were a total output value of 78 billion yuan and a growth rate of 17 percent. Since 1977, when the state instituted the guidelines of "readjustment, reform, reorganization and upgrading," the textile industry's total output value has shown large increases every year, and its share of total national industrial output value has increased from 12 percent in 1978 to about 15 percent in 1981. Per capita consumption of cotton cloth (including synthetics) increased from 24 chi in 1978 to 31 chi in 1981. This indicates a turn for the better in the long-standing serious disproportion between light and heavy industry.

Output of the main textile products exceeded state plan targets and showed rather large increases over last year.

<u>Product</u>	<u>Unit</u>	<u>1981 output</u>	<u>Increase from previous year, percent</u>
Cotton yarn	10,000 tons	317.99	8.34
Cotton and synthetic cloth	100 million meters	142.70	5.9
Cotton knitwear	10,000 tons	55.43	10.9
Woolen fabric	100 million meters	11,308	9.12
Woolen yarn	tons	76,478	33.4
Ramie fabric	10,000 meters	2,963	50.8
Silk fabric	100 million meters	83,472	4.9

With output increasing at a high rate and large production assignments, product quality was maintained essentially stable and the number of varieties and designs and colors increased. Thirteen quality indicators of 9 product types inspected by the state and the ministry all met plan targets. A total of 33 varieties and 37 plants in the national textile system were awarded state gold and silver medals. Some medium and long fine prints, pelisse cloth, cotton-polyester keluoding [phonetic], mercerized print toweling, bright wool yarn, cotton-hemp prints, cotton-hemp interweave upholstery cloth and the like went into production in many areas, which enriched the textile market; various decorative cloths, and tourist products also developed rapidly.

The branch structure and product structure of the textile industry were further readjusted. In accordance with the Central Committee's instructions regarding further rationalization of the economic structure, management system and enterprise organization, the departments of the textile industry energetically strengthened treatment following dyeing and printing, speeded up the development of the wool and hemp industries and developed key products while continuing to develop the cotton cloth industry. Compared with 1978, in 1981 the share of chemical fibers in textile raw materials increased from 15 percent to 24 percent; output of medium and high grade products, which had been extremely scarce on the market, developed rather rapidly; and output of woollens increased by 25 percent and that of woollen yarn by 95 percent, while output of polyester-cotton and ramie fabric more than doubled and output of long-staple synthetic knitwear increased by a factor of 2.6.

The tax and profit payments in the textile industry increased considerably. In 1981, in spite of several factors which decreased enterprise profits, such as decreases in the prices of some products, because textile management departments and enterprises everywhere strove to strengthen their management and to take all possible conservation measures, even minor ones, tax payments still reached 17.8 billion yuan, up 13 percent from the previous year. The continuing increase in textile industry output and tax payments contributed to further stabilizing the national economy, making markets flourish, and increasing government revenues.

#### Sizeable Increases in Sources of Textile Starting Materials

In 1981 all of the countryside continued to establish and improve various types of production responsibility systems and more effectively enlisted the peasants' production enthusiasm, as a result of which the output of textile starting materials has been further increased.

<u>Material</u>	<u>Unit</u>	<u>1978 pro- curement</u>	<u>1979 pro- curement</u>	<u>1980 pro- curement</u>	<u>1981 pro- curement</u>
Cotton	10,000 dan	4,074	4,318	5,362	5,700
Wool	100 million jin	2.76	2.95	3.18	3.30
Yellow flax	10,000 dan	2,139	2,159	2,105	2,337
Ramie	10,000 dan	47	65	74.3	87.4
Silkworms	10,000 dan	341	418	486	479
Tussah silk	10,000 dan	110	113	142	106
Cashmere	10,000 jin	645	616	673	649
Rabbit fur	tons	2,577	3,516	4,919	7,508

While the output of starting materials from agriculture and livestock raising increased greatly, the state focused on speeding up the construction of its new chemical fibers industry, and output of chemical fibers also showed a large increase.

<u>Fiber</u>	<u>Units</u>	<u>1978 output</u>	<u>1979 output</u>	<u>1980 output</u>	<u>1981 output</u>
Synthetic fiber	10,000 tons	16.94	21.36	31.41	38.47
Viscose fiber	10,000 tons	11.52	11.27	13.62	14.26
Total		28.46	32.63	45.03	52.73

The continued increase in the output of agriculturally produced raw materials and chemical fibers not only gave material support for an increased output of textile products, but also provided favorable conditions for the readjustment of the branch structure of the textile industry and its main product structure.

#### Considerable Increases in Productive Capabilities as a Result of Capital Construction

In 1981, a considerable number of capital construction projects became productive capacities; investment results were good. During the year, the scale of capital construction continued to decrease everywhere, and efforts were concentrated on developing the output of consumer products, as a result of which the provision of investments, equipment, materials and construction for textile industry projects was largely continued, and the investment plan and the plan for addition of new productive capacities were both well carried out. The national textile system completed or partially completed 17 large and middle size projects, 7 over the state plan quota; new production capacities in the main branches of the industry were also completed, and plan targets were exceeded for introduction of new capacities in the chemical fibers, number of cotton textile spindles, number of wool textile spindles, and number of ramie spindles.

Four large-scale chemical fiber projects were prepared for in the early 1970's in Shanghai, Liaoyang, Sichuan and Tianjin. The Shanghai Petrochemical Combine was completed and accepted in 1979, while the others were completed or largely completed and put into production in 1981. The second-stage construction at

the Shanghai Petrochemical Combine, whose inclusion in the capital construction plan was formally approved in March 1981, proceeded smoothly and equipment installation has begun. The Yizheng Chemical Fiber Plant, whose construction it was once decided to slow down, received State Council permission in June 1981 to rebuild one of its branch plants and carry out the corresponding engineering, and a great deal of construction preparation work has already been done.

Great progress has also been made on construction projects in the interior. The Jiaxing No 2 Woolen Mill was completed and accepted in March 1981; the period required from the sinking of the first piles to the production of acceptable worsted products was only 25 months, engineering quality is excellent, and investment required was 4 percent below the overall estimate. It is estimated that the investment will have been largely recovered by the end of 1982. In some newly authorized construction projects, heightened attention has been paid to work in the period before construction; textile industry personnel are conscientiously carrying on feasibility studies and efforts to select the best site, thus creating the conditions to decrease construction time and increase the effectiveness of the investment.

In keeping with the needs of expanding textile industry construction, the production of textile machinery has also been accelerated. Since 1979 the output of spinning machines has increased by an average of 18 percent a year; total machinery production in 1981 was 273,000 tons. The production capabilities for sets of machinery were expanded, and in addition some new varieties of machines were added. Some 182 enterprises located in 22 provinces and municipalities are producing textile machinery under the state plan, and set-compatible cotton textile, wool textile, knitting, and printing and dyeing machinery has not only basically met the needs for new plant construction in the interior and for technical modernization of old plants in numerical terms, but in addition a certain number of machines are available for export, and foreign aid.

#### Further Increases in Foreign Exchange Earnings From Export of Textile Products

As output of the textile industry has continued to increase, the share of medium- and high-grade products has expanded, textile departments everywhere have stepped up that investigation of the needs of international markets, and the number of sources of textile products suitable for export has increased considerably. In 1981, even though sales were sluggish on international textile markets, our country's textile exports still showed a certain increase. The year's export foreign exchange earnings totaled \$3.49 billion, up 7.73 percent from the previous year. This result was achieved by the efforts of employees throughout the textile system to improve product quality, to alter products structure, to increase the depth and fineness of processing, to expand the number of saleable colors, designs and varieties, and to develop new varieties.

In order to raise the quality gradings of our country's export textiles and increase their competitiveness on international markets, the first exhibition of new textile products was organized at the fall 1981 Canton Trade Fair.

Eleven provinces and cities participated in this display, showing 191 new products, all of which were medium- and high-grade varieties. The included fine-weave cotton products such as 120 count poplin and 100-count double mercerized men's shirting, which are technically difficult to produce; colored products of special materials such as polyester-linen bark crepe, silk-wool interweave checks, and yak wool mixture coat cloth; colored fabrics made by new techniques and processes, such as wax resist prints, embossed polyester-cotton, and colored long-filament polyester-cotton imitation silks; and varieties widely traded on international markets such as shrink-resistant denim and various types of decorative cloths. These products attracted the interest of visiting businessmen and increased the amount of business done.

Textiles made from synthetics and textile end products showed the greatest increase within textile exports. In 1981, the increase in export of polyester cotton cloth was greater than that of pure cotton cloth; and the increase in export of silk clothing and silk products was greater than that of silk and even greater than those of satin fabric and raw silk. All of these facts indicate an increase in the depth and fineness of processing of export textile products.

The textile industry has also done a great deal to carry on flexible trade and to utilize foreign capital. According to incomplete statistics from 12 provinces and municipalities, in the last 3 years, 310 projects have utilized foreign capital totaling \$370 million; projects involving processing of foreign materials collected more than \$22 million in processing fees. These projects have made a certain contribution to speeding up the technical modernization of older enterprises, improving product quality, increasing the range of varieties, colors and designs, and expanding exports.

#### Main Current Problems

Although the textile industry has achieved a great deal, some problems still persist.

1. As a result of irrational product prices, there is blind overproduction of high-profit products, and localities blindly import chemical fiber raw materials and products, so that stocks of certain products are increasing, which has a negative effect on economic results. At the same time, there are problems with product circulation; in particular, channels for rural markets are not moving freely, which is having a certain effect on production and sales.
2. Because of poor management, some enterprises are producing rather poor economic results. Production costs for certain products are increasing and are even resulting in losses.
3. Some localities are going blindly ahead with construction. Small-scale projects for which funds are raised locally or for which enterprises' own funds or bank loans are used, and particularly small county and commune plants, are unrestrainedly expanding their production capacities. There still has not been a fundamental change for the better in the problems of slow construction progress and long construction cycles on some projects.

The textile industry system must continue to implement the guidelines of readjustment, reform, consolidation and upgrading, make a vigorous effort to readjust branch structure and product structure and to develop new products with close attention to product saleability, expand its production capabilities under unified state planning, thoroughly shake up the enterprises in order to improve the yield of economic benefits, carry out technical modernization of old plants in accordance with local and plant conditions, conscientiously intensify scientific and technical work and the training of qualified personnel, actively, prudently and safely conduct spot experiments in reforming the management system, strive to make circulation channels move more freely and thereby achieve sustained, steady expansion of the textile industry.

8480

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## CHINA'S COMMUNE AND BRIGADE-RUN INDUSTRIES

Beijing ZHONGGUO JINGJI NIANJIAN (1982) [ALMANAC OF CHINA'S ECONOMY (1982)]  
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[Article by Zhang Yi [1728 3015], General Office of Commune and Brigade Enterprise Management, Ministry of Agriculture, Animal Husbandry, and Fishery]

[Text] Guided by the party's readjustment policy, in 1981 commune and brigade industry achieved gratifying results. By the end of 1981 there were a total of 725,000 commune and brigade industrial enterprises nationwide, a decrease of 32,000 from 1980, including 529,000 brigade industrial enterprises, down 29,000 from 1980, and 196,000 commune industrial enterprises, down 3,000 from 1980. More than 19,808,000 commune members were engaged in these industries, an increase of 386,000 from 1980; they included 10.31 million commune members in brigade-level industry, up 13,000 from 1980, and 94.98 million engaged in commune-level industry, up 373,000 from 1980. The total output value of commune and brigade industry was 56.2 billion yuan, up 5.3 billion yuan or 10.5 percent from the 1980 figure of 50.9 billion yuan (if we include 2.0 billion yuan of output of urban commune industry, the total output value was 58.2 billion yuan). Within total industrial output value, the commune-level industrial output value figure of 31.7 billion yuan showed a large increase of 10.4 percent over the previous year's figure, while the brigade-level industrial output of 24.5 billion yuan showed the large increase of 10.6 percent from the previous year.

But development in the various provinces, municipalities and autonomous regions has been quite uneven. Those jurisdictions which already had a certain foundation in commune and brigade industry continued to develop: for example, Heilongjiang, Jiangsu, Guangdong, and Sichuan showed increases of 10 percent or more and Zhejiang posted an increase of 25 percent; while provinces and autonomous regions whose original foundation was rather poor experienced small rates of growth or even decreases in the output value of commune and brigade industry. As a result, existing differences increased steadily; Beijing, Tianjin and Shanghai Cities and the provinces of Jiangsu, Zhejiang, Shandong and Guangdong increased their share of total commune and brigade industrial output value from 55.5 percent in 1980 to 57.9 percent, while Nei Monggol, Gansu, Qinghai, Ningxia, Xinjiang, Yunnan and Guizhou had their share drop from 2.6 to 2.3 percent.

Readjustment has brought about the following changes in commune and brigade industry.

1. The branch structure and product structure have changed. In the case of commune industry, for example, the raw materials and light industrial branches have expanded, while the machine building branch has contracted somewhat. Changes in the relative shares of the various industrial branches were as follows.

<u>Branch</u>	<u>1978</u>	<u>1980</u>	<u>1981</u>	<u>Remarks</u>
Metallurgy	1.9	2.3	2.22	Primarily ore and gold production
Electric power	0.47	0.6	0.63	
Coal and coke	5.66	4.61	4.49	Primarily recovery and refining of used oil
Petroleum	0.1	0.14	0.10	
Chemical	8.32	8.45	8.61	
Machine building	33.51	29.12	26.28	
Building materials	19.48	19.61	18.32	
Forest products	1.82	2.92	2.57	
Food products	5.04	7.05	8.20	
Textiles, tailoring and leather	9.54	14.25	17.95	
Paper and cultural and educational products	2.26	3.59	4.30	
Other	11.9	7.36	6.33	

Currently, although the commune and brigade machine building industry has 417,000 metal-cutting machine tools, 120,000 forging and pressing installations and 140,000 drills, its products have changed frequently in response to market needs: it first produced agricultural machinery, then changed over to machine tools, and finally to consumer electrical appliances; currently it is providing components for large industry and producing small daily-use hardware. The trend is apparent from the following table.

	<u>Unit</u>	<u>1979</u>	<u>1980</u>	<u>1981</u>
Machine tools	10,000	3.4	0.43	0.15
Agricultural machinery	10,000	52	19.2	--
Automotive parts	100 million	8.1	2.9	--
Agricultural machine parts	100 million	7.2	2.3	0.8

2. There has been further progress in product-oriented specialization and co-operation and in functioning as auxiliaries to large and industry. As China's state-run enterprises change over from the "large and self-contained" situation to specialization and cooperation in accordance with modernized production, many small commune and brigade industrial enterprises have also changed over from their past "small and self-contained" condition; generally the state-run industrial enterprises are the main units, and the commune and brigade enterprises produce parts and assemblies for them. For example, the bicycle company of Shanghai's Bureau of Light Industry has 15 percent of its handlebars, chains, axles, connectors, clothes racks, single and double braces, expansion brakes, fasteners, brake rubber and other parts and components electroplated,



produced from cold rolled strip or otherwise manufactured by more than 100 commune and brigade industrial enterprises in the city and suburbs. In Tianjin City, performance of three bicycle manufacture processes and production of 12 types of parts are done primarily or partially, by commune and brigade plants, so that the state saves 8.9 million yuan in capital construction costs and equipment investments, as well as not having to build 24,800 square meters of plant space; currently there are 2,994 commune and brigade plants and 124,000 workers in Tianjin City and suburbs carrying out machining for the second light industry system. Cooperative machining for large industry already accounts for 45 percent of total commune and brigade industrial output value in Beijing, 60 percent in Tianjin, and 62 percent in Shanghai. In order to make use of the strong points of both industry and agriculture, in the last few years there has been increasing development of joint industrial-agricultural plants; according to statistics for 1981, there were 35 such plants in Beijing, 53 in Tianjin, and 162 in Shanghai.

3. Promoting integration in a variety of forms, and correcting the previous commune-run-commune-owned and brigade-run-brigade-owned operations into operations owned by all the workers of the commune and brigade. Currently the main forms of reform of the commune and brigade industrial system are as follows. (1) Conversion from "bureaucratically" managed to management by the people: for example, Guanghan County, Sichuan returned ownership of the commune-operated enterprises to the communes by calculating each commune's share, to which it added the capital contributed by communes and commune members, dividing up profits according to the share of capital. (2) Conversion of commune-run-commune-owned enterprises into operations with shared property and division of profits. There are two ways of doing this. Kaoshan Commune, Yitong County, Jilin converted the labor, materials and funds levied from each production team for operation of the plant into the production teams' shares and distributed profits according to the size of the shares, while Shanmen Commune, Dongkou County, Hunan made a complete inventory of the current assets of commune-run enterprises, and, after deducting state investments, loans and other debits, it divided a third of the real property among the production teams according to population as their nonwithdrawable shares for calculating the division of profits. (3) Changeover from centralized distribution of profits by the commune or brigade into proportional distribution: for example, Suzhou Prefecture, Jiangsu Province proposed the "4-way division principle," in which 20-25 percent was allocated for distribution to commune members, 25 percent was paid to the commune, 30 percent was used as enterprise circulating capital, and 20-25 percent was used for enterprise expanded reproduction. Zhejiang and Fujian have declared that 20 percent of enterprises profits will be distributed to commune members engaged in agriculture. Although this system reform is just beginning, it helps to base the commune and brigade enterprises on the mass of commune members. While carrying out system reform, in order to avoid duplication and blind action in commune and brigade industry, the localities are extensively promoting a variety of joint economic units; in 1980, there were 342 jointly run rural collective agricultural-industrial enterprises, and more than 20,000 jointly run economic units of all types. In 1981, Hunan Province began the operation of 6,121 joint enterprises of various types, including 28 state enterprises jointly run with communes, 839 commune-brigade joint operations, and 5,254 operations jointly run within collectives. In

certain prefectures using the methods of large-scale contracting or contracting of output down to the household level, the commune members voluntarily reorganized and started a variety of enterprises. The processing industries developed rather rapidly: in Heze Prefecture, Shandong, about 10 percent of commune members are jointly operating industrial and sideline activities, while in Wudu Prefecture, Gansu, more than 3,000 peasant households are running more than 1,100 joint economic units, and in Jianshan County, Anhui, 3,878 agricultural households are jointly operating 509 enterprises.

4. Commune and brigade industry in coastal areas is actively pursuing the "three imports and one compensation" principle (processing of imported materials, processing according to imported patterns, installation of imported parts, and compensatory trade) and carrying on Chinese-foreign joint capital operations and cooperative production, which has created a new way for commune and brigade industry to orient toward foreign markets and to use imports to nourish export. For example, Guangdong has utilized the fact that in nearby Hong Kong and Macao there are more than 10 million Overseas Chinese and Hong Kong and Macao brothers to actively pursue the "three imports and one compensation"; in 1980 it signed 2,254 contracts of various types, primarily involving clothing, woolen textiles, knit goods, synthetic fibers, leather products, plastic products, small hardware items, toys, embroidered goods, gloves, jewelry, electronic components and the like, for which it earned a total of four times from the 1979 level. Commune and brigade enterprises in Dongguan County signed 345 contracts with foreign businessmen for processing of foreign materials and received fees totaling \$13.44 million; in 1980, Nanhai County signed 343 contracts, earning a total of \$54.59 in processing fees during the contract periods. In the last 2 years, the province's commune and brigade industry has utilized \$45.70 million in foreign capital and has brought in more than 20,000 pieces of equipment, while foreign businessmen have furnished large amounts of synthetic fiber, plastics, leather, steel semiproducts and the like and have equipped and started up commune and brigade enterprises. As a result of the pursuit of the "three imports and one compensation," 140,000 unemployed persons have been placed in jobs.

5. As a result of readjustment, the commune and brigade industries everywhere have clarified their orientation and avoided blind action. Because there is considerable variability in our country's natural resources and economic resources, even within a single province or county, in guiding the development of commune and brigade industry we must not impose a single pattern or always take the same approach, but must proceed in terms of local conditions, utilize strong points and compensate for weak points. Nationally, the policy that has been drafted for development of commune and brigade industry is, while focusing on the development of crop-raising and stock-breeding, to develop production and domestic services industries which serve agricultural production, the people's condition of life, construction of small market towns, large industry, and foreign trade and export. Various localities have drafted their own development guidelines in accordance with local characteristics. Based on the fact that commune and brigade industry is generally located close to large urban industry and that 62 percent of its total output value serves large industry, 16 percent serves foreign trade and export, and 15 percent serves the people's livelihood, Shanghai City has announced the general policy that commune and

brigade industry should primarily serve these three areas. Based on the fact that its commune and brigade enterprise includes a large machine building sector, Jiangsu Province has announced the general policy of gradually shifting from serving heavy industry and capital construction to serving light industry, scientific research, environmental protection and the livelihood of the urban and rural populace; in order to strengthen plan guidance of commune and brigade enterprises, it also announced the policy of the "four controls": controlling capital construction, controlling high-demand products, particularly trades and products which consume large amounts of energy or of scarce raw and other materials, controlling the production of substandard products, and controlling pollution. Based on the fact that it is an agricultural province, Anhui has announced that the development of commune and brigade industry should be based on local strong points and market needs and should open many marketing avenues and operate under a unified plan, energetically developing the production of consumer goods and marketable goods, with particular stress on the processing of agricultural products and the food products industry, as the focus of development of commune and brigade industry. Based on the fact that it has rich resources, Heilongjiang Province has announced the policy of energetically developing the agricultural produce and sideline products processing industry in order to help alter the agricultural structure, energetically developing the building materials industry to aid urban and rural construction, energetically creating a "third sector" to serve the people's condition of life, striving to find foreign markets in order to expand export, and effectively operating mechanical processing industry in order to help agriculture and aid the commune and brigade enterprises themselves. Commune and brigade industry is developing in accordance with these healthy orientations.

6. The job responsibility system has been implemented everywhere, and the enthusiasm of the enterprises and their employees has been mobilized. In order to overcome long-standing egalitarianism in distribution, 80 percent of commune and brigade enterprises nationwide have implemented various types of economic responsibility systems which link responsibilities, rights and interests. The main forms currently in use are: piece-rate wages, the small-collective piece rate, the above-quota piece rate, specialized contracting, profits contracting, the floating wage rate, and the work point and bonus system. The communes and brigades generally use the "fixed contract and bonus" method for ships and shifts, and implement both profits contracting and specialized contracting. In implementing the various types of responsibility systems, economic responsibility is linked not only to interests and profit or loss, but in addition to products, quality, varieties and production costs, so that the units which use the least labor and material resources gain the greatest economic benefits, and the relationship between the collective, the enterprise and the individual commune members engaged in industry is correctly handled. Implementation of the various forms of economic responsibility systems generally presupposes public ownership of the means of production, follows the principle of distribution according to work, focuses on developing production, and aims at consolidating and strengthening the collective economy and increasing commune members' income. As a result, these methods generally have achieved excellent economic results.

Because this year the commune and brigade industry carried out the above-mentioned readjustments and consolidations, even though the number of enterprises decreased by 9 percent and the number of commune members engaged in industry decreased by 6 percent, total income in the industrial enterprises increased by 6.8 percent, and labor productivity for each member engaged in industry and per capita taxes and profits generated have increased from year to year, as follows.

<u>Year</u>	<u>Labor productivity of all workers, yuan</u>	<u>Taxes and profits generated per commune member in industry, yuan</u>
1978	2,369	363
1979	2,340	437
1980	2,621	480
1981	2,923	

(Note: The reasons that labor productivity of commune and brigade industry is low are, first, that because commune and brigade industry largely produces large industry, second light industry products and processed goods for domestic and foreign trade, only processing fees rather than output value are computed, while output value and profit statistics are kept for the units for which the processing is done, and, second, that according to regulations of the relevant departments, processing of commune and brigade agricultural and sideline products is accounted for only in terms of processing fees and not in terms of output value, while output value figures are computed for state-run enterprises which do the same type of processing of agricultural and sideline products.)

Because the employees of commune and brigade enterprises are peasants who are straight from the fields, they lack knowledge and experience in running an industry; in addition, in the last few years, these industries have developed rapidly, the enterprises' cognizant departments have not been effectively organized, the enterprises' management work has been weak in all areas, and in particular financial management has been rather chaotic; this is the first major problem of commune and brigade. The second is that commune and brigade industries supply, production, sales and transport channels have been ineffective, they have relied primarily on market adjustment, and in the previous period, when social tendencies were incorrect, there was a widespread adoption of incorrect tendencies in order to survive.

In order to bring about healthy, steady future development of commune and brigade industry, in 1982 we must engage in comprehensive correction of the incorrect tendencies in this industry; we must carry out a comprehensive, stage-by-stage rectification of problems in management so as to make commune and brigade industry develop soundly in the new year with a focus on increasing economic benefits.

8480  
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## A SURVEY OF CHINA'S ENERGY INDUSTRY

Beijing ZHONGGUO JINGJI NIANJIAN (1982) [ALMANAC OF CHINA'S ECONOMY (1982)]  
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[Article by Yuan Guangru [5373 1639 1172], Energy Conservation Office, State Economic Commission]

[Text] China has relatively abundant energy resources. Currently, proven coal reserves total 650 billion tons (including 175 billion tons of reserves that have been explored in detail); developable hydropower potential totals 380 million kilowatts; there are 4.2 billion square kilometers of sedimentary rock with oil and gas potential within the continent and more than a million square kilometers on the offshore continental shelf at a depth of less than 200 meters; and a certain number of oil and gas fields have already been found.

In the 30-odd years since the state was founded, China's energy industry has developed rapidly. In 1981, we produced 621.63 million tons of raw coal, 18 times more than the 32 million tons produced in the initial period after the state was founded; we produced 101.182 million tons of crude oil, up 843 times from the 120,000 tons produced in the initial period; we produced 12.57 billion cubic meters of natural gas, up 738 times from the 17 million cubic meters produced in the initial period; we generated 306.67 billion kilowatt-hours of electricity, up 70 times from the 4.3 billion kilowatt-hours produced in the initial period, including 64.36 billion kilowatt-hours produced by hydroelectric stations, up 89 times from the 710 million kilowatt hours so generated in the initial period. The national output of primary energy resources, including raw coal, crude oil, natural gas and hydroelectric power, was equivalent to 632 million tons of standard coal, up 25.6 times from the initial period. China's energy production in recent years is shown in Table 1.

As the energy industry has developed, we have become able to carry on rather complex geological exploration for coal, petroleum, natural gas and hydropower resources and to design, build and operate large-size coal mines, opencuts, coal washing plants, fossil-fired power stations, hydroelectric stations, oil and gas fields, oil refineries, and oil and gas pipelines. We have already built a rather complete conventional energy industry system. Nuclear power stations are in the planning stage.

There are more than 6.5 million household-use methane fermentation tanks in the countryside, and more than 35 million persons are using methane. Some

Table 1.

		Output				1981 as percent of 1980
		1978	1979	1980	1981	
Primary energy resources	10 <sup>8</sup> tons	6.28	6.46	6.37	6.32	99.2
Raw coal	10 <sup>4</sup> tons	61,786	63,554	62,015	62,163	100
Local		34,184	35,777	34,439	33,505	97.3
Central-distribution		27,602	27,777	27,576	28,658	104
Crude oil	10 <sup>4</sup> tons	10,405	10,615	10,595	10,118.2	95.5
Natural gas	10 <sup>8</sup> m <sup>3</sup>	137.3	145.2	142.7	125.7	88.1
Electrical energy	10 <sup>8</sup> kWh	2,566	2,819.5	3,006.3	3,066.7	102
Hydroelectric		446	501.2	582.1	643.6	111
Fossil-fired		2,120.	2,318.3	2,424.2	2,423.1	100
Installed generating capacity	10 <sup>4</sup> kW	5,712.2	6,301	6,586.9	6,781.7	103
Hydroelectric		1,227.2	1,911	2,032	2,111.3	104
Fossil-fired		3,984.4	4,390	4,555.1	4,670.4	103

700 motive power stations using methane and more than 600 methane-powered electrical generating stations have been built. Progress has also been made in the investigation of new energy resources. Currently, more than 150 units are conducting research on solar energy. More than 50,000 square meters of solar heaters have been built in Beijing. In 1980 alone, more than 3,000 solar ovens went into use in Yongjing County, Gansu. China's first experimental multistory solar-heated building, with an area of 3,000 square meters, has been completed in Xining City. Solar-heated buildings have also been built in Gansu and Qinghai Provinces. Experimentation with wind-powered generation of electricity began in the 1950's. Experimental wind-powered electric stations based on the FD-13 unit have been built in Guoyuanzhen, Zhenhai and Lishan, Zhejiang; experimental stations have also been built in Beijing and Nei Monggol. The 1,000-kilowatt Yangbajing geothermal electric station in Tibet, the Huailai geothermal station in Hebei and the 3,000-kilowatt tidal power station in Jiangxia have also provided experience.

Production of energy resources in China has always been based primarily on coal. In the last 10-odd years petroleum production has developed rapidly, but coal production still accounts for about 70 percent of the output of primary energy resources (See table 2).

In the course of readjustment, there has been a universal improvement in energy industry product quality. In 1981 commercial coal [character missing] content decreased to 21.17 percent, the best figure in the last decade; the waste rock content of raw coal decreased to 0.46 percent, a new record; the moisture content of washed coal dropped somewhat from the 1980 figure. The moisture content of commercial crude oil shipped out of province averaged 0.3 percent, a decrease of 0.04 percent from 1980, which is below the state standard figure of 0.5 percent. The acceptance rate for petroleum products has always been maintained at 99.99 percent, and 231 products have matched international standards.

The acceptable frequency rate in 11 large electric power grids reached 99.82 percent, up 0.16 percent from 1980, and the acceptable central voltage rate in all large electrical grids was 90 percent or more.

Table 2. Structure of Primary Energy Resource Output, Percent

Year	Raw coal	Crude oil	Natural gas	Hydroelectric power
1949	96.3	0.7	--	3.0
1952	96.7	1.3	--	2.0
1953	96.3	1.7	--	2.0
1957	94.9	2.1	0.1	2.9
1962	91.4	4.8	0.9	2.9
1964	89.1	7.0	0.8	3.1
1965	88.0	8.6	0.8	2.6
1966	86.4	10.0	0.8	2.8
1967	84.1	11.3	1.1	3.5
1968	83.9	12.2	1.0	2.9
1969	82.2	13.5	1.1	3.2
1970	81.6	14.1	1.2	3.1
1971	79.3	16.0	1.4	3.3
1972	77.5	17.3	1.7	3.5
1973	74.4	19.2	2.0	4.4
1974	70.8	22.3	2.4	4.5
1975	70.6	22.6	2.4	4.4
1976	68.5	24.7	2.7	4.1
1977	69.6	23.7	2.9	3.8
1978	70.3	23.7	2.9	3.1
1979	70.2	23.5	3.0	3.3
1980	69.4	23.8	3.0	3.8
1981	70.2	23.0	2.6	4.2

China's energy export trade has been developing continuously. Export of coal began in 1950 and export of crude oil in 1973. Coal exports in 1981 totaled 6.565 million tons, up 3.9 percent from the 1980 figure of 6.32 million tons; crude oil exports totaled 13.652 million tons, up 2.6 percent from the 1980 figure of 13.31 million tons; export of finished petroleum products totaled 4.907 million tons, up 16.8 percent from the 1980 figure of 4.2 million tons.

In recent years, energy conservation efforts by the energy industry departments have posted new achievements. In 1981 the country's central-distribution coal mines saved more than 600,000 tons on in-house coal use; the crude oil commodity rate for all oil fields reached 95.26 percent, up 0.14 percent from 1980 and 0.7 percent higher than the plan figure; the overall commodity rate for processing in oil refineries reached 92.17 percent, up 0.29 percent from 1980, and 1.67 percent above the plan figure. The country's fossil-fired power stations had an average consumption of 408 grams of standard coal per kilowatt-hour generated, down 6 grams from 1980 and 2 grams below the state plan figure, equivalent to a saving of 1.8 million tons of raw coal.

Our society's energy conservation takes two main paths. The first is decreased energy use through readjustment of the proportionality between light and heavy industry and the product structure, and the second is energy conservation through strengthening energy resource management and modernizing out-of-date technologies and equipment. In the last few years we have achieved significant energy conservation results, and made an important contribution to the smooth progress of readjustment of the national economy.

In 1981, 27 million tons of standard coal was conserved. Even with primary energy resource output down 0.8 percent from 1980 and energy expenditures down 0.9 percent, this assured a growth rate of 4 percent in gross industrial output value.

Of total energy conservation, in recent years decreased use resulting from readjustment of the industrial structure and product structure has generally accounted for 80 percent; energy conserved by decreasing energy consumption per unit output has generally been about 20 percent. In 1981, for example, nationwide energy conservation was 27 million tons, of which 19.16 million tons of standard coal or 71 percent resulted from decreased energy use through improvements in industry structure, while a saving 4.13 million tons of standard coal or 15 percent came from decreased use resulting from improvement of product structure, conservation resulting from intensified energy resource management and technical reform accounted for only 3.71 million tons of standard coal, or 14 percent. This makes it clear that there has still not been a pronounced change for the better in energy consumption per unit of output; of 56 main energy-consuming products, unit energy consumption has increased for 25, or 44.6 percent. In terms of energy consumption per hundred million yuan of output value and output value per ton of coal, we still have not returned to our historic best levels.

China's energy resource output of more than 600 million tons of standard coal places us fourth in the world, while our national product stands in about eighth place; energy consumed and value created are considerably out of proportion. This is primarily because of low energy use efficiency and great waste. China's energy use efficiency is only 30 percent (see chart below); compared with some industrially developed countries (see Table 3) we suffer from serious waste in energy utilization.

In order to carry out effective conservation work based on China's actual conditions, in addition to continuing to readjust the economic structure and product structure, in the near term we must also greatly intensify energy resource management, promote new technologies in a planned fashion, modernize out-of-date processes and equipment, and improve the thermal efficiency of equipment, so as to gradually catch up to and surpass international standards (the gap between China and the industrially developed countries is shown in Table 4).



Flow Chart for China's Energy (1978)

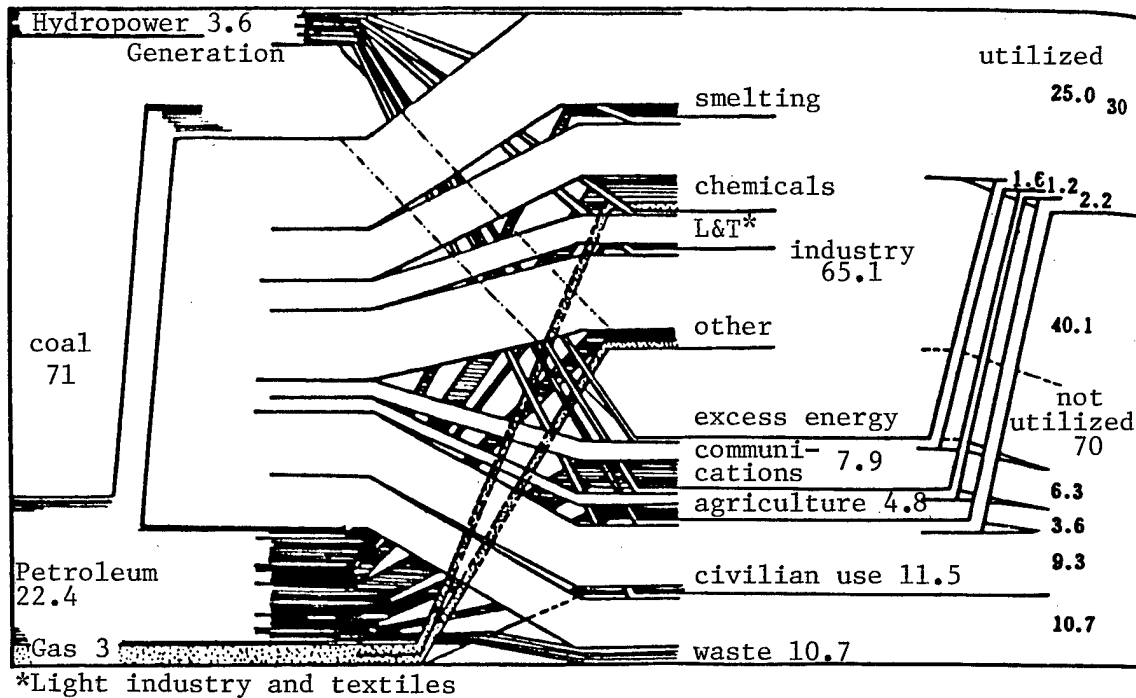


Table 3. Chinese-Foreign Energy Use Efficiency (percent)

Item	China	Japan	United States	England
Efficiency of total energy consumption:	30	57	51	40
Industry	35	78	77	67
Electric power	24	30	30	27
Communications	15	25	25	20
Civilian use	25	80	30	70

Table 4. Thermal Efficiency of Chinese-Foreign Energy-Using Equipment

Item	China	Industrially developed nations
Thermal power plants	29 percent	35-40 percent
Industrial boilers	56-60 percent	80 percent
Industrial ovens	20-30 percent	50-60 percent
Civilian stoves	15-20 percent	50-60 percent
Locomotives	6-8 percent	25 percent
	(steam engines)	(internal combustion or electric)

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CSO: 4013/179

## CHINA'S PETROLEUM INDUSTRY

Beijing ZHONGGUO JINGJI NIANJIAN (1982) [ALMANAC OF CHINA'S ECONOMY (1982)]  
in Chinese 1982 pp V 98-V 100

[Article by Research Office, Ministry of Petroleum Industry]

[Text] In 1981 the petroleum industry continued to implement the readjustment of the national economy, improved economic management, strengthened the economic responsibility system, and instituted crude oil output contracting; it achieved rather good economic results in production and construction, realized 10.179 billion yuan in profits for the year, 103.86 percent of the plan target, and paid 2.9 million yuan in taxes.

Main Production Indicators and Quota Fulfillment of Petroleum Industry for 1981

	<u>Unit</u>	<u>Amount</u>	<u>Percent of annual plan</u>
Crude oil	10,000 tons	10,122	101.2
Natural gas	100 million m <sup>3</sup>	127.4	106.2
Crude oil refining	10,000 tons	7,376.5	106.6
Oil well drilling	10,000 meters	559	103.5

The year 1981 was the fourth in succession in which China produced more than 100 million tons of crude oil. With the main oil fields beginning to produce oil with medium and high water content, all petroleum regions made an energetic effort to make adjustments at older oil fields, took vigorous steps to increase output, and carried out 58,500 downhole operations such as hydrofracturing and acidification, increasing crude oil output in old wells by 4.8 million tons. Some 2,000 wells were converted from gushers to pumped wells, with a large increase in fluid output; adjustments were made on 1,359 wells, while oil output on wells newly put into production during the year was 3.4 million tons. As a result of readjustment and various methods of exploiting potential to increase output, some older oil fields achieved better levels of development, and the overall rate of decrease shrank from 9.5 percent in 1980 to 7.9 percent. Some 25 new tracts went into development at the Daqing, Shengli, Huabei, Dagang, Liaohe and Karamay oil fields, and 5.189 million tons of crude oil production capacities and 622 million cubic meters of natural gas production capacities were built. The first-stage engineering work on these

new tracts was well underway, the underground conditions were clarified rather effectively, and development plans and surface engineering plans were conscientiously drafted, so that each project was individually managed, capital construction programs were followed, sets of equipment went into operation according to the program, the development level increased somewhat over last year, the planned indices were achieved after production started in all cases, and steady production was achieved.

There were new successes in prospecting for oil and gas resources. A total of 76,113.7 kilometers of seismic profiles were obtained, 780 exploratory wells were drilled, 583 structures of traps suitable for oil accumulations were found and tested, and 75 yielded commercial flows of oil, with important progress achieved in certain localities; the areas in which detailed exploration is being carried out may provide 34 tracts suitable for development, and new geological petroleum reserves have exceeded the original forecast. Natural gas prospecting in Sichuan located 11 oil- and gas-containing structures, 5 gas pools and 7 new fissure systems. Continental oil and gas resource prospecting is capable of achieving considerable results, primarily through vigorous seismic prospecting. Some seismic prospecting teams in key areas used digital equipment and controllable seismic sources, which increased the field data accumulation rate and accuracy; seismic data are processed by computer everywhere; conventional data processing using complex programs increased by 70 percent over 1980, data interpretation quality improved, and in particular the improvement of field prospecting techniques and data processing techniques strengthened stratigraphic studies, so that a considerable number of stratigraphic oil pools were found in the eastern area. In addition, new processes and techniques were used in well logging and formation testing, giving rather good results. The monthly formation testing rate increased by 30 percent over 1980. The use of these new types of technologies and equipment is of great importance for further improving the prospecting efficiency and expanding prospecting results.

Cooperation with foreign countries in offshore oil prospecting has achieved new results. Pursuant to eight geophysical prospecting agreements signed with foreign oil companies for the South China Sea and southern Yellow Sea, processing of 110 kilometers of seismic prospecting data has been completed; before September 1981 all of the foreign petroleum companies had provided complete results and charts. An analysis of physical prospecting data indicates that these sea areas have extensive thick sedimentary rock with good oil generation and accumulation conditions; some 474 preliminary structures and traps of all types have been discovered, including 16 large structures with areas of 100 square kilometers or more. In the Bohai and the Beibuwan section of the South China Sea, prospecting is proceeding smoothly in four Sino-Japanese and Sino-French cooperation areas; three exploratory wells have yielded oil in the Bohai cooperation areas, one of them giving a daily yield of 1,000 tons. One well has yielded oil with a daily output of 600 tons in the Beibuwan cooperation area. These results make it clear that the oil prospects in the cooperation areas are excellent, and that there is a possibility of finding commercial oil fields. The Chinese government has already decided that the first round of bid solicitations for offshore oil cooperation will take place in early 1982.

The oil refining enterprises have pursued various types of economic responsibility systems, readjusted their product structure, improved the depth of processing, intensified quality management, actively carried out technical modernization, and overfulfilled production tasks and technical and economic indicators, also achieving excellent energy conservation results.

Fulfillment of Main Production Indicators by Petroleum Processing Industry in 1981

	<u>Units</u>	<u>Amount</u>	<u>Percent of Annual Plan</u>
Four main products (gasoline kerosene, diesel oil, lubricating oil)	10,000 tons	3,417	111.5
Fuel oil	"	2,817.5	109.5
Paraffin	"	45.9	102.0
Light oil for chemical engineering	"	232.3	101.0
Petrochemical coke	"	84.2	112.3
Petrochemical pitch	"	173.7	120.2

While assuring that domestic needs for petroleum products were met, the oil refining enterprises strove to increase the quality and amounts of export petroleum products, and the year's output of export naphtha was 22 percent above the state plan target, while the output of export gasoline was 68 percent above the target. In 1981 the refining enterprises completed 28 major technical modernization projects resulting in potential for conservation of 168,000 tons of fuel oil, which further decreased total energy consumption in the oil refining industry, so that for every ton of crude oil refined, the equivalent of 79 kilograms of fuel oil was consumed, down 4.59 kilograms from 1980. As a result of conservation of in-house fuel oil consumption and improved product yields, the total commodity rate for petroleum products increased from the 1980 figure of 91.81 percent to 92.6 percent. Although the total amount of crude oil refined dropped by 6.3 percent from the 1980 figure, profits increased by 3.7 percent, and the output of finished petroleum products was 1.12 million tons above the state plan quota.

In 1981, of all products of 41 oil refineries nationwide, 20 percent were high quality products matching or close to international standards, an increase of 6.5 percent over 1980; 22 products of 13 enterprises were awarded state medals for quality, including 3 gold medals and 19 silver medals. As of the end of 1981, a total of 36 petroleum products of 16 refining enterprises had been awarded state gold and silver medals.

In oil technology, scientific and technical management was improved and strengthened, and technical cooperation both within and outside the ministry was expanded; in order to increase petroleum reserves, stabilize crude oil output and make comprehensive use of oil and gas resources, a key effort was made in oil and gas resource evaluation and prospecting, seismic prospecting technology, drilling muds, comprehensive readjustment of oil field development techniques, modernization of refinery technology, conservation in energy resource consumption and the like, which produced considerable results. Many

scientific and technical achievements resulted in major technical and economic results in production. For example, in oil and gas resource evaluation research a great deal of basic geological work was done for petroleum prospecting in China. In particular, coastal and continental shelf oil and gas resource evaluation provided geological data for offshore petroleum tender invitations; seismic stratigraphy research and its applications brought seismic prospecting to a new stage in the search for complex hidden oil and gas pools; the results of research into the laws of development of oil and gas pools in fissures in carbonate rock greatly improved the success rate in gas field prospecting and forecasting; comprehensive overhaul of oilfield development technology, including studies of sedimentary facies and jointing structure, the techniques of sinking test wells, the technique of selective hydrofracturing of within thick oil-bearing strata, and the techniques of deep-well hydrofracturing and acidification; digital modeling methods and the like have been important in guiding the reform of waterflooding in oil field development and achieving stable oil production; research and applications of optimal drilling processes have furnished effective ways of improving well drilling quality and decreasing costs; and the development of major processes and catalysts for oil refining has made good progress. During the year a total of 180 major scientific and technical results were obtained, of which 52 received ministry-level evaluations, and four were awarded state prizes for invention. The dissemination and application of scientific and technical achievements and new technologies has yielded marked economic results; 31 projects achieved an economic effect of more than a million yuan, dissemination expenditures and capital investments totaled more than 30 million yuan, and during the year the potential was developed for increasing the country's oil conservation by a net amount of more than 200 million yuan.

In the oil conservation area, the petroleum enterprises are tightening up energy management, stepping up basic work, organizing the modernization of technical facilities, increasing energy utilization efficiency conducting conservation research, and disseminating advanced experience, which has led to excellent results. The national commodity rate for crude oil produced by central-distribution organizations reached 95.22 percent, 0.72 percent above the state plan figure, resulting in a saving of 718,000 tons of crude oil; the overall commodity rate for petroleum products reached 92.16 percent, 1.67 percent above the state plan figure, equivalent to an increase of 1.12 million tons of petroleum products. The entire petroleum industry system also saved 150,000 tons of fuel oil, 35,000 tons of oil products and more than 300 million kilowatt-hours of electricity.

In 1981, there was an increase in the amount of crude oil and petroleum products provided for export: crude oil supplied for export totaled 13.838 million tons and oil products for export totaled 4.864 million tons, 102.89 percent of the state plan and an increase of 4.56 percent from 1980, creating \$4.78 billion in foreign exchange.

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## CHINA'S COAL INDUSTRY

Beijing ZHONGGUO JINGJI NIANJIAN (1982) [ALMANAC OF CHINA'S ECONOMY (1982)]  
in Chinese 1982 pp V 105-V 108

[Article by Policy Research Office, Ministry of Coal Industry]

[Text] In 1981 China's coal industry achieved stable output and underwent readjustment.

The national raw coal output was 621.63 million tons, 105.7 percent of the state plan quota, up 0.2 percent from the previous year. The output of dressed coal was 48.87 million tons, 101.8 percent of the plan quota, a decrease of 3.7 percent from the previous year. The ash content of commercial coal from coal mines under central distribution averaged 21.17 percent, down 0.41 percent from last year; the waste rock content averaged 0.46 percent, down 0.05 percent from the previous year, a new record.

A total of 2,403,000,000 yuan in capital construction investments was used by the coal industry. Some 1,274,000,000 yuan went for new mine construction, down 78 million yuan from the previous year, while 204 million yuan was used on expansion of existing mines, down 35 million yuan from the previous year.

1. With a profusion of readjustment tasks, raw coal output continued to remain steady in the vicinity of 600 million tons, increasing slightly from the previous year.

In 1981, total raw coal output was 621.63 million tons, 33.63 million tons above plan, an increase of 1.5 million tons from the previous year.

Raw coal output in coal mines under the unified distribution system in 1981 totaled 335.05 million tons, 99.13 percent of the state plan quota, down 9.34 million tons from 1980. The change was made from a passive to an active situation. At the beginning of the year production conditions were poor. The Ministry of Coal Industry organized its cadres to go to the basic levels for surveys and fact-finding, held frequent meetings, repeatedly studied and mastered the spirit of central government decrees, correctly understood the readjustment policy and stressed a vigorous spirit and all-out effort. Everyone understood that if the coal industry did not go forward with readjustment, it would go backward and that it was necessary to hold the line at an output of

600 million tons while doing everything possible to increase output and make progress. Leadership organizations at all levels organized many cadres to go to the front line of production and intensify ideological and political work, extensively mobilize the masses, hold labor competitions, and rectify labor organization and labor discipline, which resulted in a new production situation and steady improvement. In September through December the average output of central-distribution coal mines reached 957,000 tons, up more than 50,000 tons from the average daily rate in August, and the plan was overfulfilled in each of these months.

Fulfillment of the main economic and technical indicators for central-distribution coal mines in 1981 is shown in Tables 1 through 4.

Table 1. Structure of Stoping Output in Mines Under the Unified Distribution System, 1981

a		占回采总产量的% b	
分 类		1981年	1980年
按 厚 度 层 分 c	1.3米以下 d	11.30	12.60
	1.3~3.5米 e	45.79	44.21
	3.5米以上 f	42.91	43.19
按 倾 斜 度 层 分 g	<12°	50.16	47.87
	12° ~ 25°	33.46	36.29
	25° ~ 45°	11.18	10.59
	>45°	5.20	5.25

Key:

a. Category

b. Percentage of stoping output

c. By thickness of seam

d. Less than 1.3 meters

e. 1.3-3.5 meters

f. Over 3.5 meters

g. By inclination of seam

Table 2. Indexes for Stoping Workfaces in Mines Under the Unified Distribution System, 1981

a		b	1981年	1980年
项 目	计算单位			
回平采工作面平均	个 数 d	个 h	2,134.47	2,167.01
	每个面长 e	米 / 个 i	95.63	95.08
	月 进 度 f	米 / 个 · 月 j	37.76	39.32
	月 产 量 g	吨 / 个 · 月 k	10,908	11,032
煤层生产能力 k		吨 / 平方米 l	3.021	2.951
回采总产量 m		万 吨 n	27,939	28,687

Key:

a. Category

b. Planning units

c. Average for stoping faces

d. Number

e. Face length

f. Monthly advance

g. Monthly output

h. Face

i. Meters per face

j. Meters per face per month

k. Seam productive capacity

l. Tons per square meter

m. Total stoping output

n. 10,000 tons

o. Tons per face per month

Table 3. Indexes for Tunneling Workfaces in Mines Under the Unified Distribution System, 1981

a掘进 工作面	平 均 个 数 b		平均月进度(米/个/月) c	
	1981年	1980年	1981年	1980年
d全 部	5,102.90	5,269.26	99.70	107.87
e煤 巷	1,718.86	1,744.52	142.78	154.55
f半煤巷	1,336.79	1,380.52	111.73	121.89
g岩 巷	2,047.25	2,144.22	55.67	60.87

Key:

- |   |                        |
|---|------------------------|
| a. Tunneling workface                                       | d. Overall             |
| b. Average number   | e. Coal tunneling      |
| c. Average monthly advance<br>(tons per workface per month) | f. Half-coal tunneling |
|   | g. Rock tunneling      |

Table 4. Technical-Economic Indexes for Mines Under the Unified Distribution System, 1981

	项 目 a	计算单位 b	1981年	1980年
效 率 c	全 员 d	吨/工 g	0.870	0.912
	回 采 工 e	吨/工	4.040	4.129
	掘 进 工 f	米/工 h	0.115	0.125
煤 质 i	商 品 煤 j	灰 分 k	%	21.17
		含 矸 率 l	%	0.46
	洗 精 煤 m	回 收 率 n	%	54.65
		灰 分 o	%	10.34
		水 分 p	%	11.78
				12.03

Key:

- |                      |                       |
|----------------------|-----------------------|
| a. Item              | i. Coal quality       |
| b. Planning unit     | j. Commercial coal    |
| c. Efficiency        | k. Ash content        |
| d. All personnel     | l. Waste rock content |
| e. Stopers           | m. Dressed coal       |
| f. Tunnelers         | n. Recovery rate      |
| g. Tons per worker   | o. Ash content        |
| h. Meters per worker | p. Moisture content   |

2. The pace of readjustment increased and the expected results were achieved.

The ratio of tunneling to extraction was readjusted. The total planned amount of engineering work in central-distribution coal mines was 120,000 meters, while the actual amount completed was over 140,000. It was planned to reorganize 27 mines, while 29 were actually reorganized, resulting in a rated capability of 19.95 million tons a year. To date, 65 or 96 mines and opencuts in which coal extraction and excavation were out of proportion have been readjusted, resulting



in a rated capacity of 41.21 million tons a year. The total amount of readjustment engineering involved was 552,000 meters, or 61.5 percent of all readjustment engineering. During the year, central-distribution coal mines carried out 788,800 meters of tunneling, 8.06 percent above plan.

**Safety Improvements.** In 1981 the focus was on key projects in protection against such natural dangers as gas, coal dust, roof rock, water and fire. Some 38 central-distribution and key coal mines rebuilt or refurbished their gas removal systems, 81 mines built or refurbished fire protection grouting systems, 153 mines built or refurbished dust protection sprinkler systems, and 21 mines expanded their ventilation capabilities. As a result, gas ejection capabilities in central-distribution and key mines nationwide increased by 25 percent, and the total amount of gas ejected was more than 300 million cubic meters; fire protection grouting capabilities increased by 2,896 cubic meters; the total number of coal workfaces with sprinklers or sprayers increased by 22.5 percent; and the total amount of ventilation air fed into mines increased by 9.9 percent.

**Modernization of older mines.** The plan called for 44 mine shaft modernization projects, 26 associated public engineering projects in mine districts, 30,000 meters of shaft and tunnel engineering, and completion of 170,000 square meters of civil engineering work. The actual amount of work completed was 50,600 meters of shaft and tunnel engineering, 214,200 square meters of civil engineering, 21 modernization projects, and 19 mine district associated public engineering projects. The total investment for the year in modernization of older mines was 217.9 million yuan.

3. Mine construction work was stepped up, and a good year's record in commissioning new mines was achieved.

During the readjustment period, an effort was made to speed up construction work and increase economic results in coal mine capital construction. The amount of shaft sinking and tunneling completed and the number of mines put into production in 1981 met state plan quotas, and the engineering cost of direct supply projects for units in the coal system engaged in capital construction work was 2.11 percent below the budgeted cost.

Forty mines with a rated annual capacity of 30,000 tons or more, were completed and put into operation, yielding a total rated annual capacity of 13.73 million tons. They included 11 coal mine expansions, with a total capacity of 3.1 million tons a year, and 29 new mines, with a capacity of 10.63 million tons per year. Nine coal dressing plants were built, expanded or reconstituted, adding new coal dressing capacities of 7.8 million tons.

The newly commissioned mine capacity was the greatest since 1976. The newly commissioned Xinglongzhuang Mine in Yanzhou, Shandong, a large mine with a capacity of 3 million tons a year, is of Chinese design and construction which took 6 and a half years to complete; the construction quality is good, and the engineering work was rated as excellent by the state inspection and acceptance commission.

Work was started on 12 mines with a total capacity of 10.10 million tons. The Longdong Vertical Mine in Dakun, Jiangsu, has a rated capacity of 900,000 tons a year.

Coalfield geological prospecting was reorganized. Geological work was strengthened in Shanxi, Henan, Heilongjiang, Nei Monggol, Shandong, Anhui and Guizhou, with priority given to prospecting urgently needed for coal production or construction. In 1981, 111 geological reports of various types were submitted, and 9.9 billion tons of new reserves were proved. The state plan was fulfilled well in exploratory drilling, surface physical prospecting, hydrogeology and aerial surveys. Prospecting quality and the quality of geological reports increased. The proportion of class A and B exploratory drillholes reached 87 percent, and the average coal core recovery rate reached 84 percent; the cost per meter was 1.5 percent below plan.

In accordance with the need for new construction of mines and coal dressing, selecting and processing facilities, the design units furnished one overall coal district design, with a rated capacity of 1.05 million tons, 30 preliminary coal mine designs with a rated capacity of 25.19 million tons, and 8 preliminary coal dressing plant designs with a rated capacity of 9.6 million tons. In addition they completed feasibility studies for 11 coal shafts and 6 coal dressing plants and modernization designs for 29 local coal mines in Shanxi Province. They carried out preliminary documentation for accelerating the development of the Shanxi coal base.

#### 4. Local coal mines were consolidated and developed during readjustment.

In 1981 the total raw coal output of local coal mines nationwide was 286.58 million tons, 114.63 percent of the state plan quota, an overfulfillment of 36.58 million tons, and an increase of 3.93 percent from 1980.

Since the state was founded, with state support and under the guidance of the local governments, local coal mines have developed rapidly. Some 2,140 counties and cities are running more than 1,200 coal mines. Currently there are more than 20,300 local coal mines nationwide, of which 2,490 are state-run.

Since 1979, the output of commune and brigade coal mines has been rising steadily, but that of local state-run coal mines has been dropping steadily. In order to stop falling production in local state-run mines, in the last 2 years some province (and autonomous region) governments have made a vigorous effort in local coal mine consolidation and readjustment and have taken certain protective measures. The relevant ministries and commissions of the Central Government have intensified their fact-finding work; in 1981 they held a nationwide local coal mine work conference and a commune and brigade coal mine symposium, which developed economic policies for consolidating local coal mines. In December, the State Council transmitted the State Energy Commission's report, "A Request Regarding Certain Economic Policies for State-Run Coal Mines," the principal policy measures in which were as follows. (1) The people's governments of the provinces, municipalities and autonomous regions were to apply the loss subsidy method to local coal mines that are under the unified distribution system to assure that they could continue in normal production and

were to improve management so that the local coal mines' production would realize the necessary profits. (2) Starting in 1982, the industrial and commercial tax rate for all local coal mines nationwide would be decreased to 5 percent; and the industrial and commercial tax would be decreased or exempt in accordance with the specific conditions in seven provinces and regions south of the Yangtze River (Zhejiang, Jiangxi, Fujian, Hunan, Hubei, Guangdong, and Guangxi), for the local coal mines in southern Jiangsu and southern Anhui, and in other mines in areas where the extraction conditions are extremely difficult. (3) Capital construction investments and technical modernization funds for local coal mines were to be increased. (4) The local coal mines' allocations for maintaining simple reproduction were to be suitably increased.

Since September 1981 the output of local state-run coal mines has begun to rise again; the rate of decrease for the year was less than in the past. As the economic policy is implemented there will be further consolidation and development.

#### 5. Gradual enterprise reorganization.

In 1981 the experimental reorganization of five enterprises, the Fuxin, Datong and Pingdingshan coal bureaus, the Huainan headquarters and the Beijing Coal Mine Machinery Plant was undertaken. The Ministry of Coal Industry and relevant provincial coal bureau sent joint work teams to help the enterprises carry out their preliminary reorganization. The surface coal enterprises also undertook varying degrees of enterprise reorganization in accordance with their actual situations. The reorganization of coal industry enterprises focuses on the following five main areas.

a. Consolidation of leadership groups, starting with rectification of party style. The Ministry of Coal Industry has coordinated the efforts by local party committees to rectify party style in the light of model individuals and model actions and has investigated and dealt with certain typical cases of enterprise leadership cadres' use of their positions for private gain. Starting in October, the system of having leadership cadres work together with the mining shifts was restored; in accordance with requirements, many cadres took part in shift labor or other labor. On the principle of making them more revolutionary, more youthful, more oriented toward intellectuals and more specialized, preliminary reorganization of certain enterprise leadership groups was carried out. There was a decrease of 0.8 years in the average age of coal enterprise leadership personnel in 50 key enterprises, and the relative proportion of technical cadres increased from 19.6 percent to 24.7 percent.

b. The ranks of the employees were rectified, starting with rectification of labor organization and labor discipline. In August, the Ministry of Coal Industry and the State General Office of Labor drafted a "Temporary Regulation on Several Important Current Labor Questions in Coal Mines Under the Unified Distribution System." Its provisions included the following: Miners or tunnelers hired since 1978 who have not gone to the front line of work or who have subsequently been rotated back to the surface must be mobilized to return to the front line of coal extraction or tunneling; the education of consistent

offenders against labor discipline or laws and regulations must be stepped up, and those who do not respond must be dealt with organizationally. According to incomplete statistics, at year's end more than 6,000 persons who had been rotated to the surface had returned to the mines, including 315 children of leadership cadres at the mining office level or above. In addition, labor discipline had been stepped up and the attendance rate for miners and tunnelers had increased by 2 to 5 percent.

c. Rectification of wages and bonuses, starting with effective setting of quotas. The Zhengyuan coal mine of the Jixi Mining Bureau and the Gaoyang coal mine of the Fenxi Mining Bureau experimentally introduced compensation according to output and a floating wage system, with some success. The Ministry of Coal Industry summarized their experience and drafted experimental procedures for these approaches; nationwide, 100 coal mines under the unified distribution system have now introduced them. Problems of excessive bonuses in certain enterprises have also been rectified.

d. Rectification of management, starting with investigation of waste and stopping up of leaks. After the Fuxin on-the-spot conference on enterprise rectification, all of the country's coal enterprises started a movement to increase receipts and decrease expenditures, and enterprise management gradually improved. In January-April, the key coal enterprises nationwide posted losses every month, while starting in May they showed a profit every month, meeting their militant goal of changing from losses to profits for the entire year.

e. Rectification of production technology management, starting with tunneling and coal extraction workfaces. With a focus on introduction of good production conditions and quality indicators and a normal operating cycle on the tunneling and coal extraction workfaces, an effective job responsibility system and system of regulations were established. In addition, production geological work was strengthened, mine development layout was improved, coal extraction procedures were made more rational, coal-cutting methods were reformed, and so on. The rate of unserviceability of tunnels in coal mines under the unified distribution system decreased by 0.74 percent from last year, and an inspection revealed that 51 coal mines met the standards for good production conditions; coal extraction methods were reformed on 50 workfaces.

6. A beginning was made in intensification of coal processing and comprehensive utilization.

In recent years there has been some success in coal processing and comprehensive utilization. In 1981, in keeping with the spirit of directives issued by the leading comrades of the party's Central Committee, a specialist conference was held, studies were conducted and plans were made; processing and use of coal and its comprehensive management and utilization were resolutely strengthened, and there was gradual progress from single-type operations to integrated operations.

By the end of 1981 the main results in this area were as follows:

a. The use of waste rock, bone coal and other low-caloric-value fuels resulted in energy conservation, expansion of the energy supply and production of a variety of building materials. As of the end of 1981, the country's coal mines under the unified distribution system had rebuilt 530 boiling furnaces (with 3,550 steam/tons) that burn coal waste rock and poor-quality coal, equivalent to 25.4 percent of the total boiler evaporation capacity; and had rebuilt 723 simple coal gas stoves and double layer stoker semi-coal gas furnaces. The nation's coal system built 391 waste-rock brick plants and bone-coal brick plants, with a capacity of 2.5 billion bricks per year, and produced 1.15 billion bricks from waste rock. Some 90 waste-rock cement plants and bone-coal cement plants, with a capacity of 1.2 million tons a year, were built. In 1981 the country's coal system utilized a total of 13.36 tons of waste rock and poor-quality coal, and extracted and used 5.5 million tons of bone coal, equivalent to a savings of 2.37 million tons of good-quality coal; the total output value of the comprehensive utilization activities was 300 million yuan.

b. There was new progress in the forming of pulverized coal. A variety of top-igniting honeycomb briquets based on soft coal, anthracite, brown coal, bone coal, oil shale and the like have been developed. The heat efficiency may be 40 percent or more, and the coal saving compared with ordinary beehive briquets is about 15 percent, while the saving compared with burning of raw coal is more than 40 percent; harmful gas emissions are decreased by about 70 percent compared with ordinary beehive briquets. Experiments with formed locomotive coal continued; the burning of this coal is capable of saving 20 to 30 percent on coal compared with the burning of raw coal, while increasing locomotive motive power, decreasing the stokers' labor, and helping to cut down on smoke, ash and pollution. Easy-igniting coal balls for heating have been successfully trial produced; a 35-gram coal ball, once ignited by firewood, can burn steadily for about 14 hours.

c. Urban use of coal gas has been intensified, and there has been new progress in experiments with fast coking and gasification of brown coal and oil shale. The coal gasification company jointly managed by the Ministry of the Coal Industry and Shanxi Province accepted the task of gradually developing converting Taiyuan City to coal gas, and construction of a coking and coal gas plant has already begun. The Shenyang City Pressure Gasification Plant, the first in the country to use brown coal to produce coal gas, is being built at an intense pace. Yantai City has developed a construction program for coal gasification.

d. Comprehensive utilization of humic acids has expanded from agriculture to gardening, the feed industry, industry proper, environmental protection, medicines, health and other areas, and has broad prospects.

e. A variety of chemical engineering products such as aluminum chloride, "polyaluminum," lignite wax and vanadium pentoxide have been extracted from coal, waste rock and bone coal. Some of these products have already gone on sale on international markets.

7. A search for new ways of reforming the management system and enterprise management.

In 1981 new attempts were made to reform the coal industry management system.

The coal management system was reformed in four provinces. In May, the Anhui Coal Industry Company was organized to carry out centralized management of the province's coal production, construction and other work. This was an experiment in reform of the coal management system. In addition the State Council approved the changes in the subordination system of key coal enterprises and services in Heilongjiang, Jilin and Liaoning Provinces, involving dual leadership by the ministry and the province, with the ministry taking the primary role.

Unified management of coal production and sales was instituted. On 27 August 1981 the State Council approved the "Report of the State Economic Commission, State Planning Commission and State Energy Commission on Changes in Coal Ordering and Dispatching." Starting on 1 October, the Ministry of the Coal Industry took charge of the planning of nationwide coal production and distribution and organized such work as coal orders, supply at fixed locations, coal ordering agreements and the like, as well as shipment of coal in accordance with ordering agreements. The ministry held a meeting which determined that the general policy of the "2 orientations and 10 principles" should be implemented in coal shipment and sales. The 2 orientations are: an orientation toward nationwide coal mines and an orientation toward households; the "10 principles" are: planned distribution, flexible dispatching, supply at fixed locations, assurance of quality and quantity, cooperation between railroads and mines (including harbors), the three priorities (within-plan first and out-of-plan afterwards, key organizations first and ordinary organizations afterwards, out-of-province first and within-province afterwards), dressing and processing, conservation of coal, promoting production, and making things easier for the user. In addition it drafted the "Service Regulations for Coal Transport and Sales Personnel." After production and sales were unified there was a decrease in the number of intermediate links, dispatching became more flexible, coordination between railroads and coal mines and between production and transport was increased, the supply of coal for the winter was guaranteed during the fourth quarter, and the annual plan quotas for coal distribution and orders were completed.

The economic responsibility system was implemented on a trial basis. The coal systems in certain provinces and autonomous regions implemented the profits (or losses) contracting system, achieving good economic results. In the first quarter, Shandong Province's key coal enterprises lost 13.57 million yuan; in April they implemented profit or loss contracting, and in the second quarter they went from losing money to making money, realizing 9.59 million yuan in profits. At the beginning of the year the plan quota for the key coal enterprises in Hebei Province called for profits of 50 million yuan; after the profit and loss contracting system was instituted, the annual profit was 86.61 million yuan.

Two types of labor system were developed and implemented in accordance with coal production conditions. In addition to the fixed wage, the rural contract

worker system was implemented (no change in household grain supply, signed agreements, rotation at a fixed date). In recent years the Fengfeng Mining Bureau in Hebei and the Panjiang Mining Bureau in Guizhou have tested various methods, but when they adopted the contract worker system on the tunneling front line, they decreased the state and enterprise burden, which helped renovate the front line labor force in the mines and also provided a work for excess rural manpower. In 1981, five provinces, including Shanxi, hired nearly 10,000 contract workers in accordance with plan.

The contract system was implemented on a trial basis in mine construction. In its mine construction, Liaoning Province was the first to carry out the experiments, followed by Jiangxi, Shaanxi, Henan and Yunnan Provinces. According to year-end statistics, the system was instituted on a total of 805 engineering projects in the coal industry capital construction system. The results make it clear that this system promoted coordination between design and construction units, made economic rights and responsibilities clear, restored the necessary oversight and restrictions, helped to improve engineering quality, decreased engineering costs, and speeded up construction; thus it was an effective type of economic responsibility system.

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## CHINA'S ELECTRIC POWER INDUSTRY

Beijing ZHONGGUO JINGJI NIANJIAN (1982) [ALMANAC OF CHINA'S ECONOMY (1982)]  
in Chinese 1982 pp V 108-V 110

[Article by Chen Zengqing, [7115 1073 1987], Ministry of Water Resources and Electric Power]

[Text] In 1981 all employees and workers of the electric power industry continued to conscientiously implement the policy of readjustment of the national economy and overfulfilled all state-specified plan quotas and assignments.

In 1981 the plan quota for nationwide output of electric energy was 305 billion kilowatt-hours, while actual output was 309.3 billion kWh, 1.41 percent over the target and up 8.7 billion kWh or 2.9 percent from 1980. The total amount of hydroelectric power called for in the plan was 50 billion kWh, while the actual amount produced was 65.6 billion kWh, a 31.2 percent overfulfillment of the state plan and an increase of 7.4 billion kWh or 12.7 percent from 1980. The plan target for thermal power generation was 25.5 billion kWh, and the actual output was 24.37 billion kWh, 4.5 percent below the target, but an increase of 1.3 billion kWh or 0.5 percent from 1980. The breakdown of nationwide electrical output in 1981 is as follows: The share of hydroelectric power increased from 19.4 percent in 1980 to 21.2 percent, while the share of fossil-fired power fell from 80.6 percent in 1980 to 78.8 percent (the share of coal-fired power fell from 59.4 percent to 58.7 percent, and the share of oil-fired power from 21.2 percent to 20.1 percent). The country's thermo-electric power stations provided a total of 755.2 trillion kilocalories of heat, up 2.8 percent from 1980. During 1981 the electric power industry made an effort in the three links of production. (1) It continued to implement the policy of "safety first," carried out personnel training, decreased equipment defects, strictly implemented a system of regulations, and prevented the occurrence of major accidents, so that in 1981 the total number of accidents was somewhat lower than in 1980. (2) It made a major effort in generating equipment maintenance and modernization, and basically made the equipment capable of generating and transmitting electricity. (3) It implemented the economic responsibility system, strengthened centralized management of the power grid, strengthened the accounting of quotas at all links of electrical generation and supply, held small emulation drives regarding production targets, issued bonuses in terms of work points, and effectively mobilized the production enthusiasm of the employees.



With a considerable nationwide decrease in capital construction, in 1981 the electric power industry system still succeeded in carrying out 3.76 billion yuan worth of capital construction, which placed it first among all trades and industries. The state plan called for putting 17 large and medium-size units into production, with a total capacity of 1,838,000 kW; the actual number of units commissioned was 17, with a capacity of 1,823,000 kW. Adding to this figure, 814,000 kW of capacity in the enterprise-operated power plants and plants which were expanded using renovation and modernization funds and local investments, total additional generating capacity in 1981 was 2,983,000 kW [as published], including 1,195,000 kW of hydroelectric capacity and 1,788,000 kW of thermo-electric power capacity. A total of 5,237 kilometers of transmission lines of 110 kV or higher was built in 1981, along with 7.65 million kilovolt-amperes of transformer capacity (not including 2.54 million kilovolt-amperes of step-up transformer capacity in the 110,000-volt class or above at new power plants), which exceeded state plan quotas by 24.6 and 46.8 percent respectively. Electric power capital construction work in 1981 made considerable progress compared with 1980. There was improvement in management, construction periods were shortened, construction quality was improved, and many construction units managed to have the systems complete when construction work was finished, leaving no final unfinished details, so that the systems were easy to operate and production proceeded safely.

As a group of large and medium-size hydroelectric and thermal power generating units and high-voltage transmission lines went into operation in 1981, they had a great effect in mitigating power shortages in certain areas. For example, when the river was successfully dammed and navigation channels opened at the Gezhouba hydroelectric station on the Changjiang, two 170,000-kW units began to produce electricity in the fourth quarter; the associated 220-kV transmission lines and the 500-kV superhigh-voltage line from Pingdingshan, Henan, to Wuhan, Hubei, with their associated transformers going into operation along with it, greatly improved the supply of electricity in Central China. The commissioning of the second 210,000-kW generating unit at the Wujiangdu Hydroelectric Station in Guizhou and the associated 220-kV high-tension line from Zunyi in Guizhou to Qijiang in Sichuan not only made it possible to satisfy the electricity needs of the Guizhou area, but also to transmit electricity directly to Changqing, which had an electricity shortage. The construction of a 220-kV high-tension line from Harbin, Heilongjiang to Xinhua completed the interconnection of the northeastern main power grid and the western Heilongjiang power grid, in addition to which a 200,000-kW unit at the Fulaerji Power Station was put into test operation at the end of the year, relieving the electricity shortage in the western Heilongjiang grid. A 200,000-kW generating unit was completed and commissioned at the Shentou Power Station in Shuo County, Shanxi and connected with the Shanxi grid, the southern Hebei grid and the Beijing-Tianjin-Tangshan grid, improving electricity supply in the Beijing-Tianjin-Tangshan area; the completion of a 200,000-kW generating unit at the Huaibei Power Station in Anhui provided additional electric power for the Huaibei-Huainan area and decreased the electricity shortage in the east China power grid.

A comparatively large number of transmission lines and transformer stations were completed in 1981. The first 500-kV ultra high-voltage line from

Pingdingshan, Henan, to Wuhan, Hubei, and its transformer facilities, (with a total length of 595 km, and a total capacity of 3 million KVA in three transformer stations) was smoothly completed and put into operation, marking the attainment of a new level in our transmission line and transformer technology.

During 1981, the electric power industry also had good results in energy conservation and improving electricity supply quality. Because there was heavy rainfall in most of the country, hydroelectric generation capacity exceeded the state plan by 15.6 billion kWh, equivalent to a saving of over 9 million tons of raw coal; owing to the implementation of the Temporary Regulations for Economic Dispatching in Hydroelectric Station Reservoirs in the power grid and consistent rational use of water power, economical use of water and decreased water consumption, an additional output of 1.9 billion kWh resulted, equivalent to a saving of more than 1.1 million tons of raw coal. The relative share of high-temperature, high-pressure generating capacities at thermo-electric power stations was increased; based on statistics for 21 power grids nationwide (equivalent to 85 percent of total national generating capacity), the power generation share of high-temperature, high-pressure units increased from 72.4 percent in 1980 to 75.3 percent in 1981, higher than their share of installed capacity (72.8 percent), with the result that medium- and low-pressure units generated 5.49 million fewer kilowatt-hours. The coal consumption rate in the nation's power plants with capacities of 6,000 kW or more reached 442 g/kWh, down 6 g/kWh from the 1980 figure, resulting in a saving of 1.31 million tons of standard coal, equivalent to 1.96 million tons of raw coal. When this saving is added to the saving from increased generation of hydroelectric power, the total saving is about 11 million tons of raw coal. This had a great effect in easing the fuel and transport shortages in 1981 and assuring electrical power output. The electricity supply quality in all of the nation's power grids continued to improve; the acceptable frequency rate in 21 grids was 99.1 percent, and the central acceptable voltage rate reached 96.5 percent. But in some rural areas and cities, owing to irrational network structure and excessively long transmission lines, above-quota power consumption, insufficient reactive equipment and the like, voltages are still too low, and improving voltage quality remains a long-term task of the electric power departments and the user departments.

There was new progress in decreasing oil consumption in the country's public power stations in 1981. In addition generating units with capacities of 340,000 kW changed over from burning oil to coal, decreasing oil consumption by 1.06 million tons from 1980 (the planned target was 1 million tons). From 1976 to 1981 a total of 3.65 million kW of generating unit capacity was converted from oil to coal, and oil consumption in 1981 was 6 million tons lower than in 1976, as shown below. This work will continue.

Year	Generating capacities planned for oil and changed over to coal (10,000 kW)	Oil consumption (10,000 tons)
1976	583.5	1,160
1977	523.4	1,153
1978	413.4	981.1
1979	313.2	779.2
1980	252.3	669
1981	218.3	562.9

As a result of the readjustment of the national economy, there were changes in the electricity consumption structure in 1981, as shown in the following table:

#### Electricity Consumption Structure

用 电 部 门	a	电 量 ( 亿 度 )				占发电量的比重 (%) c	
		1980年	1981年	1981年比1980年增长 d		1980年	1981年
				绝对值 e	百分数 (%) f		
g 一、全国发电量		3.006	3.093	87	2.9	100	100
h 二、用户总用电量		2.573	2.634.1	61.1	2.4	85.6	85.2
i 其中: 1. 农村用电		431	459.9	28.9	6.7	14.3	14.9
j 其中: 由电网供电		374.4	415.6	41.2	11	12.4	13.4
k 电网外农村		56.6	44.3	-12.3	-21.7	1.9	1.5
l 小电站自发自用							
m 2. 工业用电		1.961.3	1.975.3	14	0.7	65.3	63.9
n 其中: 轻工业用电		317.9	354	36.1	11.4	10.6	11.4
o 重工业用电		1.643.4	1.621.3	-22.1	- 1.3	54.7	52.5
p 3. 交通运输用电		14.7	16.5	1.8	12.2	0.5	0.5
q 4. 市政生活用电		166	182.4	16.4	9.9	5.5	5.9
r 三、电力工业自身用电		433	458.9	25.9	6	14.4	14.8
s 其中: 发电站自用		198.7	208.9	10.2	5.1	6.6	6.7
t 供电线路损失		234.3	250	15.7	6.7	7.8	8.1

#### Key:

- |  |   |
|--|---|
| a. User department                           | 1. Produced for own use by small power stations |
| b. Amount (100 million kWh)                  | m. 2. Industrial electricity consumption        |
| c. Percentage of total output                | n. Light industry                               |
| d. 1981 increase over 1980                   | o. Heavy industry                               |
| e. Absolute                                  | p. 3. Electricity consumption in communications |
| f. Percentage                                | q. 4. Municipal and domestic energy use         |
| g. A. National electricity output            | r. C. Use by electric power industry            |
| h. B. Total electricity consumption by users | s. including: use by power stations             |
| i. 1. Rural electricity consumption          | t. transmission line losses                     |
| j. including: supplied from grid             |   |
| k. villages outside grid                     |   |

The proportion of total electrical power output accounted for by power consumption in the various sectors in 1981 as compared with 1980 was as follows. Power consumption increased by 0.6 percent in the countryside, decreased by 1.4 percent in industry (it was up 0.8 percent in light industry and down 2.2 percent in heavy industry), was unchanged in transport and communications, and increased by 0.4 percent in municipal and domestic use; in-house use by the electric power industry increased by 0.4 percent. As a result of changes in industrial structure and electricity consumption structure, there were considerable changes in total electricity consumption per 10,000 yuan of output for all industry. In 1981 industry consumed 3,826 kWh per 10,000 yuan of output (in light industry the figure was 1,330 kWh, and in heavy industry, 6,412 kWh), a drop of 123 kWh from the 1980 figure of 3,929 kWh. Correspondingly, industrial output per kilowatt-hour was 2.63 yuan (the figure was 7.52 yuan in light industry and 1.56 yuan in heavy industry), an increase of 0.09 yuan from the 1980 figure of 2.54 yuan.

As a result of readjustment of the national industrial structure, heavy industry's electricity consumption in 1981 decreased by 2.2 billion kWh from the 1980 figure, while light industry's consumption increased by 3.6 billion kWh. Agricultural electricity consumption increased by 2.9 billion kWh, and that of communications and transport by 200 million kWh, while municipal and residential power consumption increased by 1.6 billion kWh. During 1981, supply shortages eased for most parts of the country, but the northeastern, east China, and Beijing-Tianjin-Tangshan power grids, supplying the coastal industrial base, and the Guangdong and Sichuan internal power grids still experienced considerable shortages, particularly from September on, when electric power consumption in heavy industry reversed its falling trend of the previous three quarters and began to rise, and power consumption in the coal, petroleum, building materials and nonferrous metallurgical sectors increased gradually, so that heavy industry's power consumption in the fourth quarter was 4.38 billion kWh, exceeding the 1980 figure for the same period by 5.5 percent, and electricity tended to be in shorter supply in many areas.

The average number of hours' use of generating equipment in power stations with capacities of 500 kW or more during 1981 was 4,955 hours (the figure was 3,520 for hydroelectric stations and 5,511 for thermo-electric power stations), a slight decrease from the 1980 figure of 5,078.

In 1981 there was new progress in concentrated, centralized management of the power grids. Many grids were expanded. For example, the Shanxi power grid was connected with the southern Hebei power grid and the Beijing-Tianjin-Tangshan power grid; the north China main power and the western Heilongjiang power grid were connected; and the Guizhou power grid was connected with the Sichuan power grid. The southwestern electric power industry management office was established under the guidance of the Ministry of Water Resources and Electric Power to carry out unified management of the electric power industry in Yunnan, Guizhou and Sichuan. The Yunnan, Shandong and Jiangxi Power Industry Offices were made directly subordinate to the Ministry of Water Resources and Electric Power. As of the end of 1981, on the basis of the development needs of the various power grids, the northeast, north China, east China, central China, northwest, and southwest regional power industry manage

management offices were established, while Guangdong, Guangxi, Fujian, Hunan and Xinjiang and Tibet had their power industries still under local management. In addition, the experiment in expanded enterprise autonomy in which the power grid was used as a complete accounting unit continued, achieving definite results.

During 1981, there was extremely great flooding on the Changjiang, Huanghe and Hanshi Rivers, and there were unusual flood disasters in many areas, which did serious damage to the electric power industry. With the guidance of the various level party committees and governments, and as a result of stubborn struggle by army, people and employees in the face of these floods, the Gezhou-ba dam on the Changjiang, the Longyangxia cofferdam and the Liujiaxia dam on the upper reaches of the Huanghe and the Shiquan Hydroelectric Station on the upper reaches of the Hanjiang were protected, the flood damage on the middle and lower Huanghe was mitigated, and the electric supply facilities in Shannan, Liaonan and Sichuan which had been damaged by the flooding were quickly restored, achieving a great victory in flood prevention and antiflood work; in addition, the struggle gave rise to several advanced antiflood units and individuals.

In 1981 the power industry's scientific and technical front also achieved some new results, and there was new progress in educational work and cadre training. Because of stepped-up promotion of the economic responsibility system and enterprise reorganization, management work was strengthened and the supply and finance departments at the various levels provided the needed goods and funds needed for production, construction and various other undertakings in timely fashion and completed payments to the higher levels; total profits realized exceeded the 1980 level. In addition, they carried out a major financial inspection and consolidated financial discipline. In order to deal with the problem of employee housing, in 1981 they added 1.76 million square meters of housing space.

To summarize, in 1981 the electric power industry made stable progress in readjustment, but its readjustment tasks are still quite heavy.

The electrical industry's 1982 production and capital construction plans and tasks have already been set by the state. It is forecast that electricity consumption in the countryside, in light industry and in the people's daily lives will increase considerably from the 1981 levels, while consumption by heavy industry will also be moving upward. As a result, on a national scale the 1982 supply of electricity will be tighter than in 1981, especially in the older coastal industrial areas. All electrical industry employees have resolved to continue conscientiously implementing the policy of readjustment and of equal emphasis on energy development and conservation; while speeding up electric power construction, improving engineering quality, decreasing engineering costs and thoroughly making use of investments, they must also assure safe production and energetically develop electricity consumption planning, electricity conservation, priority supply of electricity, and economic dispatching in the power grids, conscientiously make a success of all other work, devotedly serving all consumers, and strive to fulfill and overfulfill the state-assigned plan targets and tasks, thereby making a new contribution to providing the energy needed for a 4 percent growth of the national economy in 1982.

## CHINA'S HEAVY MACHINERY INDUSTRY

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[Article by Xu Wei [6079 0251] of the General Heavy Mining Machinery Bureau  
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[Excerpts] In semifeudal, semicolonial China the foundations of the machinery industry were very weak; in particular there existed gaps in the machine-building industry. After the founding of new China, the heavy machine-building industry, with great importance attached by the party and government, went from small to large and slowly developed a more complete, rather substantial foundation for the manufacturing industry.

China's heavy machinery industrial products generally include:

1. Coking, iron smelting, and steel smelting equipment and steel rolling equipment;
2. Extracting and hoisting equipment for open-pit and pit mines, coal dressing and washing equipment, sintering equipment, coal transportation and coal powder manufacturing equipment of thermal power plants;
3. Cement and construction materials equipment;
4. Hoisting and transportation machinery (equivalent to what is known abroad as "materials handling machinery"), various tools such as hoists, opening-closing mechanisms, ship lifts, and other kinds of tools for key water control projects;
5. Various types of forging press equipment for forging, pressing, extruding, drawing, winding, straightening, and multilayer hot pressing.
6. Construction machinery (equivalent to the so-called "building construction machinery" in foreign countries;
7. All kinds of pneumatic machinery and tools;
8. Large-sized forgings and castings used for steam turbines, generators, water turbines, rollers, bearings, and molds.

Currently China's heavy machine-building industry has 300 large- and medium-sized factories with a total of 300,000 employees and workers. There are 19 specialized research institutes. They have mastered 401 series and 1,500 types of products. Every year these plants provide various sectors of the national economy with hundreds of thousands of tons of equipment. The machinery which has been installed on some engineering projects is briefly described as follows:

The equipment for Tangshan's pit coal mine with an annual output of 2.7 million tons and for Pingdingshan's Coal Washing Plant with an annual capacity of 3 million tons;

Panzhihua Integrated Iron and Steel Mill's coal mining and dressing plant (with an annual output and ore processing capacity of 6.5 million tons), coking plant (5.5 meter tall carbonization chamber), iron smelting plant (1,000 cubic meter blast furnace), steel mill (120-ton oxygen-blown converter), sintering plant (130 square meter sintering machine), preliminary rolling plant (1,150mm preliminary rolling mill), rail and beam plant (950/800mm rail and beam mill), etc., all equipped with complete sets of equipment;

Benxi Iron and Steel Mill's 1700mm continuous hot mangle (under trial production) and a continuous cold mangle (waiting to be installed);

Maanshan Tire-Rim Plant's complete set of equipment. Products from this plant have been exported;

The Southwest Aluminum Processing Plant's founding cast, rolling press (2,800mm hot-cold mangle won the national silver medal award for quality), die forging (30,000-ton hydraulic die forging machine won the national silver medal award for quality), extruding press (12,500 ton horizontal extrusion press won the national silver medal award for quality), and the complete sets of workshop equipment. The plant uses the above equipment to manufacture the "Swallow" brand aluminum sheets which have been favorably received in Hong Kong and other foreign countries. It won the national gold medal award for quality;

The Second Motor Vehicle Plant's die forging, pressing, and other large-scale press forging equipment;

Beijing Guanghua Lumber Mill's artificial board equipment;

The complete set of equipment for the 300,000-ton annual output Pingdingshan Cement Plant, which employs the semidry method, and the complete set of equipment for the 220,000-ton annual output Xiangtan Cement Plant, which applies the wet method;

The engineering design and complete set of equipment for Pakistan's Takexila [1044-344-6006-2139] Heavy Machinery Plant and its forging cast plant;

All types of cranes, sluice gate opening and closing mechanisms for Gezhouba's key water control project; and

Complete sets of equipment, such as 1,250-6,000-ton free forging hydraulic machines exported to Romania.

Thus, China's heavy machinery industrial products have been spread nationwide. In many of the plants built after the founding of new China, one can see the machinery and equipment manufactured by China's heavy machinery industry.

By virtue of the work carried out in 1981, China's heavy machinery industry is advancing towards healthy development with a new posture:

1. Develop product varieties, widen the service parameters, overcome the shortcomings of rendering very limited service to the heavy industry and capital construction areas as in the past.

Increase the production of consumer products, manufacture household electrical appliances, furniture, kitchen appliances, medical equipment, bicycle parts, etc., in an effort to satisfy the market needs.

Develop the production of special equipment for the light industry, such as bicycle manufacturing, special sewing machine equipment, beer plant equipment, and cigarette plant equipment, ice cream-making machines, and sugar-production equipment.

Increase the production of equipment needed for making light industrial materials, such as aluminum sheet rolling press, aluminum foil rolling press, and pipe welding units.

Develop machinery and equipment that serve the construction industry, such as production line equipment for making steel molds to replace wooden molds in concrete pouring, prefabricated concrete beams and columns, equipment that utilizes slag to manufacture bricks, and tall building cranes, etc.

Serve the technological transformation in the national economy. In coordination with the major coke oven repair project of the Anshan Iron and Steel Company, provide the project with sufficient equipment for the renovation of the coke oven, so as to increase the degree of mechanization. They have supplied the small- and medium-sized steel mills in various localities with numerous pieces of equipment for fitting and renovating their rolling machines, solving the problems of the shortages and poor quality of small-sized rolled steel. Most heavy machinery or mining machinery plants have undertaken the responsibilities of modifying the small cement plants in various places in order to raise their cement grade and output.

- (2) Strengthen scientific and technical projects and strive to raise the standards of quality and technology.

This started with the modification of old products and renewal of series of products. In 1981 there was a series of improved products, including single beam bridge cranes, tube-type coolers, and pneumatic drills, etc., for large types of pneumatic machinery. The prototype of 5-50 ton double beam bridge-type hoist has been built and will be modified after testing.



Prolong the service life of the basic parts. In 1981 11 basic parts of 6 kinds of rock drill parts, hoist brake shoes, shaft cover and lining board of coal grinders, excavator bucket gears, bulldozer blades, and lining board for ball mills, have been tested and researched many times and they have passed their designated life expectancies and are to be put into use in production.

Advanced technology applied in product research. For example, the static pressure oil-film bearing has undergone its intermediate testing; several hydraulic components have been used for the parts of imported equipment, and the results have been very good. Research on such projects as microprocessor controls applied in variable cross-sections, strengthening machine, model flying shear, and stretching bend straightener, has been successful.

New technology research. In order to raise the interior quality of castings, the Shenyang Heavy Machinery Plant has successfully tested using furan resin sand poured into a 22-ton cast; the Second Heavy Machinery Plant applies external chill and insulation generating agents poured into a 182-ton casting structure; and Taiyuan Heavy Machinery Plant employs an all fiber crankshaft staggered extrusion forging technique, etc.

In 1981 were the Dalian Machinery Plant's cold-shearing and electric power-driven platform wagon, Taiyuan Heavy Machinery Plant's sheet metal strengthening machine, the belt conveyors of Shanghai, Jiaozuo, and Sichuan, Hangzhou's 16 kinds of "reliable products," including forklift; Tianjin's single beam bridge cranes, and Sichuan's 5-ton hydraulic automobile crane, Zhejiang's chain block. These four kinds of hoisting equipment won the national silver award for quality.

3. Develop technical cooperation in production with foreign countries and expand China's export. As of 1981, China has imported: West Germany's Aomuke [1159 1191 4430] Company's 11 series of die forging equipment; Komatsu Manufacturing Company's high power bulldozer from Japan; West Germany's EVT Company's fan grinder; West Germany's Demake [1795 7456 344] Company's small square billet casting machine, 140mm seamless tubing rolling machine, and various types of cranes, American R.S. Company's vibratory sieve, centrifugal dehydrator and whirler; Japan's Mitsubishi Heavy Industries Ltd's fork lift; and West Germany's Luociaite [5012 5412 1002 3676] Company's rotary support; die forging equipment, high power bulldozers, and fan grinders have all been manufactured to meet the demands of various departments and the rest are undergoing technical information exchanges or being manufactured.

Carry out contractual bids with foreign firms and provide equipment for transportation and ports.

Expand exportation. In 1981 the volume of export increased by 60 percent over the previous year; the products were exported to 74 countries and regions. The Pagoda Jack and Flying Pigeon brands chain blocks have become famous products in the international market. A lot of forging equipment has been exported to Romania. Large-scale forging casts have started to enter the American markets. Businesswise, flexible methods have been adopted. According to customer demands, namebrands from foreign countries are selected and

combined with China's own products then exported. For example, fork lifts made in Hangzhou equipped with the Japanese Isuzu diesel engine are well received abroad.

4. Strengthen business management, establish the China General Heavy Machinery Cooperation and develop various forms of economic cooperation.

Plants have generally established sales departments, and strengthened contract management.

Train the operators of departments using heavy machinery and assist user departments with the installation, testing, tuning and repairing to facilitate the supply of maintenance components and undertake major repairs on complete sets of equipment of the departments using the heavy machinery.

The China General Heavy Machinery Cooperation is responsible for organizing the design, manufacture, and supply, as well as the technical services, of complete sets of equipment at home and abroad. It has signed technical cooperative agreements with 26 experienced domestic plants and design units. Within the short period of 1 year, it has accepted the task of manufacturing three complete sets of rolling machinery for airport warehouse and one aqua products storage house at home. It has also taken on the contractual task of producing complete sets of equipment for 26 steel rolling mills, cement plants, and brick plants for foreign firms. It has also exported some of the forging casts.

Over 30 regional or transregional special economic cooperatives, such as the China Complete Mining Machinery Manufacturing Company, Shenyang Heavy Mining Machinery Company, Sancheng Company, China Construction Machinery Company, and China Rock Drilling Company and Pneumatic Machinery Company, have been established on a voluntary basis.

Due to historical reasons, the degree of specialization in China's heavy machinery industry is still low. Most plants are all-purpose plants. The foundation of scientific research is also still weak. Testing method adopted by some plants are still relatively backward. Management work still cannot keep up with the demands of both the domestic markets and international cooperation. Under the prerequisites of treating the planned economy as primary and the market's adjustment as secondary the question of how to more rationally organize, avoid duplication and unnecessary competition as much as possible remains to be studied further and solved.

China's heavy machinery industry made the following achievements and contributions in the following areas in accordance with the instructions of the party and government in 1982.

(1) Continue to adjust the direction of service, expand the scope of services, and better meet the needs of the national economic adjustment program, emphatically do a good job of perfecting and evaluating complete sets of equipment, particularly the 10-cubic-meter excavator for large-scale open-pit

The Development of China's Heavy Machinery Industry as Seen From Several Typical Products

Product	Year			
	1949-1958	1959-1965	1966-1976	1977-1981
Excavator	3 cubic meters	4 cubic meters	4 cubic meters walking type	10 cubic meters
Grab loader	--	0.11 cubic meters	0.4 cubic meters	0.6 cubic meters
Hoist	single cable	multiple cable	improved single, multiple cable	grounded multiple cable
Magnetic ore separator	electromagnetic band type weak magnetic ore separator	permanent magnet tube type weak magnetic ore separator	permanent magnet strong magnetic ore separator	--
Rolling mill	650 medium- scale shape rolling mill	1,150 initial rolling mill, wheel rim mill	4,200 specially thick plate rolling mill 950/800 rail and beam rolling mill	1,700 hot, cold continuous plate rolling mill
Large-scale forging press equipment	5-ton forging hammer	12,500-ton hydraulic forging press, 1,600-ton extrusion press	30,000-ton hydraulic die forg- ing press, 12,500- ton extrusion press	8,000-ton extrusion press

The Introduction of Key Enterprises of China's Heavy Machinery Industry

Plants	Number of employees	Occupied space x 10,000m <sup>2</sup>	Mining equipment	Smelting equipment	Steel rolling equipment	Forging press equipment	Hoisting equipment	Transporta- tion equipment	Cement equipment	Water conservancy equipment	Excavator
First Heavy Machinery Plant	15,000	579	X	X	X	X			X	X	
Second Heavy Machinery Plant	14,000	245	X		X	X			X	X	
Shenyang Heavy Machinery Plant	11,000	118	X		X	X			X		
Taiyuan Heavy Machinery Plant	13,000	258	X		X	X	X				X
Dalian Heavy Machinery Plant	9,500	50		X	X			X			
Beijing Heavy Machinery Plant	7,674	84			X	X	X				
Tianjin Heavy Machinery Plant	7,596	109.5			X		X				
Shanghai Heavy Machinery Plant	9,334	81.4	X	X	X	X			X		
Luoyang Mining Machinery Plant	12,000	160	X		X				X	X	

mines and on the testing and appraisal of complete sets of equipment for the large-scale coal washing plants with an annual handling capacity of 3 million tons and on the trial manufacture and testing of the pressurized gas stove and two-stage gas stove for city gas services. It is necessary to further organize and investigate the departments using heavy machinery research and satisfy the various departments' needs for technical reform and put into production in a planned and organized way the imported technologies and produce samples.

(2) Truly strengthen the scientific and technical programs and actually give them top priority. In 1982, 88 scientific research projects will be developed; 120 technical standards will be established; 34 technical standards will be revised, and trial production of 82 new product varieties must be completed.

(3) Start the technical transformation of plants. The emphasis of the transformation will be placed on energy conservation, improved product quality, orientation towards the newly developed services and export needs. Make forging castings reach international standards, and develop hard service gears, and so on in order to heighten technical standards and economic returns.

(4) Reorganize the enterprises in an all-around way and strive to increase the operating management standards.

We are convinced that with the endeavors of many employees and workers in the forefront of the heavy machinery industry, China's heavy machinery industry in 1982 will take a giant step forward on the road to healthy development. As Li Bo wrote in a poem: "When the opportunity of braving the winds and waves arises, I will set sail and cross the vast ocean."

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## CHINA'S AUTOMOTIVE INDUSTRY

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[Article by Ji Hua [1323 5478]]

[Text] 1. Historical Survey

Since the state was founded, our automotive industry has come into being, grown and developed considerably.

Before Liberation there were only a few automobile repair and spare parts plants in large cities such as Beijing, Shanghai, Tianjin and Chongqing, producing certain automotive parts and components. In Old China, not a single domestically-produced automobile traveled the roads.

After New China was founded, the state accorded great importance to establishing and developing the automotive industry.

a. In the 7-year period from the founding of the People's Republic to 1956, based on the needs of the national economy, the state approved efforts to establish China's first automotive production base, the No 1 Motor Vehicle Plant. After 3 years' construction, it was completed in 1956, (with an annual capacity of 30,000 motor vehicles) and started series production of the Jiefang motor vehicle, which ended the history of China's inability to produce motor vehicles. After the construction of the No 1 Motor Vehicle Plant, the Beijing Motor Vehicle Parts Plant was rebuilt as the No 1 Automotive Accessories Plant, specializing in production of carburetors and fuel pumps, motor vehicle plants in Shanghai, Nanjing, Wuhan and Jinan were reorganized and the special orientation of these enterprises' production, was clarified, laying down a foundation for the development of China's automotive industry.

b. In the 10 years from 1957 to 1966, the automotive industry began an overall technical modernization and reorganization and began plans to build a new automotive base. After the No 1 Motor Vehicle Plant completed its first-stage plant construction, in 1958 it trial-produced a 2.5-ton cross country vehicle, then the Hongqi brand high-grade automobile, and began their series production. In 1965, it began to expand on the basis of a program for 3 basic models and an annual output of 60,000 vehicles.

During this period, the motor vehicle and spare parts plants in many provinces and cities throughout the country also utilized their existing bases to organize multiplant cooperation; starting with imitation, they trial-produced and regularly produced motor vehicles. Nanjing Motor Vehicle Plant had begun as a parts plant. In 1958 it began trial production of the Yuejin 2.5-ton truck, and in 1966 it developed into a motor vehicle manufacturing plant with a capacity of more than 4,000 vehicles a year. The Beijing Motor Vehicle Plant had started as a motor vehicle repair and spare parts plant. In 1963, it test-produced a light cross country vehicle, then, after expansion, resumed operations in 1966, when it produced more than 500 vehicles. Shortly after Liberation, the Jinan Motor Vehicle Plant gradually converted from a motor vehicle repair plant to the production of motor vehicle parts and trial-produced the Huanghe light cross country vehicle and 2.5-ton and 4-ton trucks; in 1960 it trial-produced several Huanghe 8-ton trucks, and in 1966 it produced more than 600 vehicles. Before Liberation, the Shanghai Motor Vehicle Plant was a motor vehicle repair and spare parts plant; in 1957 it began to produce jeeps; in 1958 it produced a 3-wheeled vehicle, and trial-produced the Shanghai brand automobile; as a result of continuing improvements, in 1966 it was able to produce 200 automobiles. In addition, some provinces and cities developed certain motor vehicle and spare parts plants and machine-building plants into motor vehicle manufacturing plants, such as the Tianjin Motor Vehicle Plant, the Shanghai Truck Plant and the like.

As the vehicles themselves developed, the motor vehicle parts industry also progressed, gradually developing into a series of key specialized parts plants producing automobile electric motors and equipment, carburetors, pistons, piston rings, gears, steel leaf springs and the like, with respectable production technology, and were able to produce a few imported parts that were in short supply. These plants had a major effect in providing the main accessories and components for motor vehicle maintenance and repair. For example, a rather stable cooperative accessories network was established for the Jiefang vehicle, with more than 70 plants furnishing more than 500 cooperative products.

During the 3 years' readjustment of the national economy in 1960-1962, motor vehicle output decreased somewhat. In 1964, a restructuring of the industrial system began, and the China Motor Vehicle Industry Corporation was set up on a trial basis. It organized the entire automotive industry under unified planning with rational division of labor, and established several branches: based on the No 1 Motor Vehicle Plant, it organized the production of the Jiefang; based on the Nanjing Motor Vehicle Plant and the Nanjing Automotive Parts Company it organized the production of the Yuejin; and on the basis of the Beijing Motor Vehicle Plant it organized the production of light motor vehicles and trucks; and on the basis of the Jinan Motor Vehicle Plant it organized the production of the Huanghe. During this period there was a considerable expansion in the number of motor vehicle industry enterprises and personnel; in 1966, motor vehicle output reached 56,000 units.

In order to further develop the motor vehicle industry and improve its layout, starting in 1964 plans were made for building the No 2 Motor Vehicle Plant and the Sichuan Heavy Truck Plant.

c. The 10 years of the Cultural Revolution began in 1966. Large-scale construction of the No 2 Motor Vehicle Plant began in September 1966, but this was a period of chaos, and there was a great deal of interference and sabotage during the construction process; a production base for the 2.5-ton cross country vehicles was finally built in June 1975, after which a production base for 5-ton trucks was essentially completed. The No 2 Motor Vehicle Plant now has more than 50,000 employees, and the industrial construction covers 1.26 million square meters, with 18,000 pieces of equipment, 98 percent of which was domestically designed and manufactured, with more than 500 machine tool plants furnishing equipment for it.

Plans for construction of the Sichuan Motor Vehicle Plant began in 1964. In addition to new construction of shops for machining of chassis parts, stamping of body parts, and overall assembly, it made thorough use of expansion and modernization of the existing enterprise and produced other assemblies. For example it utilized the Chongqing Automotive Engine Plant to produce the engine, the Qijiang Gear Plant to produce the gear box, the Chongqing Automotive Parts Plant to produce the brake and steering systems, and the Hongyan Springs Plant to produce the steel leaf springs. The Sichuan Heavy Truck Plant was basically completed in 1966. Because the Cultural Revolution retarded progress, it began production only in 1974.

During the 10 years of the Cultural Revolution, some provinces and cities also utilized the local industrial base and instituted division of labor and cooperation to produce the Beijing-130, Yuejin, Jiefang and Huanghe vehicles. It should be pointed out that the Beijing No 2 Motor Vehicle Plant, which originally had performed automotive repair, in 1966 began to design and produce the Beijing-130 2-ton truck. Making thorough use of all potential, it cooperated with other plants which produced engine parts and assemblies to organize motor vehicle production, receiving only about 10 million yuan in state investments. By 1976 it had already produced 4,000 vehicles. But because of an excessive increase in the number of automotive plants, most of which were engaged in "small but complete" production, there was relatively serious duplication in production, and quality, efficiency and economic performance were rather poor.

d. After the "gang of four" was smashed in 1976, and particularly starting in 1978, the development of the automotive industry entered a new stage. During this period, the automotive industry focused on the following types of work: an energetic enterprise reorganization aimed at improving product quality, study of foreign management experience, improvement of the enterprise management standards, accelerated improvement of older products, and development of new products. In order to correct outmoded products, the enterprises all modernized their older products and strengthened research and design work, with a focus on energy conservation. While improving products, in recent years there has been an intensification of research and design work, personnel have been trained, and there has been considerable progress, in addition to which industrial-branch readjustment and reorganization have been conducted, integration has been promoted, and there has been a planned, gradual establishment of joint-managed companies based on the key automotive plants.



## 2. The Current State of the Automotive Industry

As a result of more than 30 years' construction, China has made a start in developing a motor vehicle manufacturing industry system, combining large-, medium- and small-sized plants, on a considerable scale, and it is able to use its own resources to produce a total of 38 varieties, including light, medium and heavy trucks, cross country vehicles, dump trucks, tractor trucks, buses and automobiles, more than 100 special vehicle modifications, and a wide variety of automotive parts and accessories. There are 73 motor vehicle manufacturing plants, 137 specialized vehicle plants, and nearly 2,000 automotive parts plants, with a total of 720,000 employees. In 1980 output reached 222,000 vehicles and 2.6 billion automotive parts.

In 1981 China was continuing readjustment, restructuring, reorganization and upgrading of its national economy. In order to meet the needs of development of the national economy, the automotive industry made great efforts to develop production, conserve energy, improve older products, develop new products and carry out readjustment and reorganization, achieving gratifying results.

a. In 1981 the total national output of motor vehicles was 176,000 units, of the following varieties.

<u>Product</u>	<u>National output</u>	<u>First Ministry of Machine Building output</u>
National motor vehicle output	175,645	165,654
Trucks	108,267	100,902
Truck chassis	39,986	39,371
Cross country tractor trucks (including chassis)	4,617	4,147
Light cross country vehicles	15,452	15,387
Small sedans	3,428	3,408
Tour buses	1,656	861
Other	2,239	1,578

b. There has been progress in improving older products and developing new ones. The Jiefang, produced by the No 1 Motor Vehicle Plant, the Dongfeng, produced by the No 2 Motor Vehicle Plant, the Yuejin, produced by the Nanjing Motor Vehicle Plant, and the Beijing-130, produced by the Beijing No 2 Motor Vehicle Plant, have been improved to various degrees, and the enterprises' development work on second-generation products is being accelerated (see table for specifications of the products of the key motor vehicle plants).

c. Certain results have been achieved in energy conservation. As a result of continuing modernization of certain older products by some enterprises, there has been a steady decrease in fuel consumption. For example, the Jiefang 4.5-ton truck consumes 23.4 percent less fuel per hundred kilometers than the 4-ton truck, the Dongfeng 5-ton truck consumes 10.7 percent less fuel, the

# Technical Characteristics of the Main Automotive Products

a 序号	b 厂名	c 整 车 指 标					
		d 型 号	e 驱 动 型 式	f 驾 驶 室 型 式	g 载 重 (公 斤) 公 路 / 越 野	h 自 重 (公 斤)	i 总 重 (公 斤) 公 路 / 越 野
1	第一汽车厂	j CA-10B 解放牌载重车 k	4 × 2	长头 l	4000/-	3800	8025/-
2		CA-10C 解放牌载重车	4 × 2	"	4500/-	3900	8625/-
3		CA-30A 解放牌越野车 m	6 × 6	"	4500/2500	5340	9990/7990
4		CA-770 红旗牌轿车 n	4 × 2	"	8 (人) o	2730	3290
5	第二汽车厂	p EQ240 东风牌越野车 q	6 × 6	"	4000/2500	4850	9060/7560
6		EQ140 东风牌载重车 r	4 × 2	"	5000/-	4080	9290/-
7	南京汽车厂	s NJ130 跃进牌载重车 t	4 × 2	"	2500/-	2710	5360/-
8		NJ134 跃进牌载重车	4 × 2	"	3000/-	2500	5640/-
9		NJ230 跃进牌越野车 u	4 × 4	"	2000/1500	3200	5350/4850
10	北京汽车厂	v BJ212 北京牌轻型越野车 w	4 × 4	"	5 (人) o	1530	1955
11		BJ212A 北京牌轻型越野车 x	4 × 4	"	8 (人) o	1530	2180
12	北京第二汽车厂	y BJ130 北京牌载重车 z	4 × 2	平头 A	2000/-	1880	4045/-
13	济南汽车厂	B JN150 黄河牌载重车 C	4 × 2	"	8000/-	6800	15060/-
14		JN151 黄河牌载重车	4 × 2	"	8000/-	6680	14860/-
15	四川汽车厂	D CQ261 红岩牌越野车 E	6 × 6	"	10000/6000	14200	24460/20460
16	上海汽车厂	F SH760A 上海牌小轿车 G	4 × 2	长头 l	5 (人)	1440	1765

## Key:

- a. Number
- b. Plant
- c. Vehicle characteristics
- d. Model
- e. Drive arrangement
- f. Cab type
- g. Capacity, kg (highway/cross country)
- h. Vehicle weight, kg
- i. Gross weight, kg (highway/cross country)
- j. No 1 Motor Vehicle Plant
- k. Jiefang truck
- l. Long top
- m. Jiefang cross country truck
- n. Hongqi sedan
- o. Persons
- p. No 2 Motor Vehicle Plant
- q. Dongfeng cross country truck
- r. Dongfeng truck
- s. Nanjing Motor Vehicle Plant
- t. Yuejin truck
- u. Yuejin cross country truck
- v. Beijing Motor Vehicle Plant
- w. Beijing light cross country truck
- x. Beijing light cross country truck
- y. Beijing No 2 Motor Vehicle Plant
- z. Beijing truck

标 C			发 动 机 指 标 H					备 注 Q
整车尺寸 (毫米) I 长×宽×高	最高车速公里/小时	最大爬坡度% K	型 号 L	缸数-缸径×冲程 (毫米) M	排量 N (升)	最大功率 O 马力/转/分	最大扭矩 P 公斤·米/转/分	
6670×2460×2200	75	20.0	CA10B	6-101.6×114.3	5.55	95/2800	31/1100-1200	已停产 R
6670×2355×2310	80	28.0	CA10C	6-101.6×114.3	5.55	110/2800	35/1000-1200	
6680×2315×2360	65	53.2	CA10CG	6-101.6×114.3	5.55	115/2800	36/1000-1200	
5980×1990×1640	160	—	8V100	V8-100×90	5.65	220/4400	42/2800-3000	
6410×2255×2365	80	57.7	Q6100	6-100×115	5.42	135/3000	36/1200	
6910×2470×2455	90	28.0	Q6100-I	6-100×115	5.42	135/3000	36/1200	已停产
5538×2344×2165	70	30.0	NJ70	6-82×110	3.48	79/3300	20.5/1500	
5838×2280×2117	80	30.6	NJ70F	6-82×110	3.48	80/3300	21/1500-1700	
5800×2280×2245	76	57.7	NJ70A	6-82×110	3.48	88/3300	22/1800	
3860×1750×1870	98	49.9	492QA	4-92×92	2.445	75/3500-4000	17.5/2000-2500	
3860×1750×2054	98	49.9	492QA	4-92×92	2.445	75/3500-4000	17.5/2000-2500	
4710×1850×2100	85	36.4	492QA	4-92×92	2.445	75/3500-4000	17.5/2000-2500	
7600×2400×2600	71	27.0	6315Q	6-135×140	12	160/1800	70/1200-1300	
7600×2400×2600	67	27.0	6210Q-1	6-120×140	9.5	160/2000	62/1300-1400	
7870×2740×2930	61	60.1	6140B	6-140×160	14.778	200/1800	85/1400	
4860×1772×1585	130	—	680	6-80×74	2.232	90/4800	15/3500	

[Key continued]

- A. Flat top
- B. Jinan Motor Vehicle Plant
- C. Huanghe truck
- D. Sichuan Motor Vehicle Plant
- E. Hongyan cross country truck
- F. Shanghai Motor Vehicle Plant
- G. Shanghai small sedan
- H. Engine characteristics
- I. Dimensions, meters (length x width x height)
- J. Top speed, km per hour
- K. Steepest grade, percent
- L. Model
- M. Number of cylinders--radius x stroke (mm)
- N. Displacement (meters)
- O. Maximum power, HP; rpm
- P. Maximum torque, kg-m/rpm
- Q. Remarks
- R. Out of production

Yuejin 3-ton truck consumes 16.6 percent less fuel than the 2.5 ton truck, the Beijing 2-ton truck consumes 12 percent less fuel, and the Beijing light cross country vehicle consumes 23.5 percent less fuel.

d. The automotive industry has been readjusted and reorganized on the principle of specialization, cooperation and economic rationality. In 1981 the Dongfeng Joint Automotive Corporation was formed on the basis of the No 2 Motor Vehicle Plant to produce a series of 5-ton trucks, and the Nanjing Joint Automotive Corporation, based on the Nanjing Motor Vehicle Plant, was organized for production, involving several provinces and cities, of a series of 1-ton to 4-ton trucks. In addition it is planned to organize joint-managed automotive and automotive parts corporations and to further integrate enterprises producing the same types of products on the principle of specialization, cooperation and economic rationality.

### 3. Problems and Prospects

The automotive industry has extensive developmental prospects in China. But we currently face a number of difficult problems, the chief among which are: dispersed plants, multiple management, duplicate construction, production in small quantities, a low degree of specialization, a limited number of models, irrational product structure, outmoded product performance characteristics, and weak research and education. During the period of readjustment, we should carry out planned, conscientious solution of the automotive industry's problems.

a. We must continue to readjust the automotive industry, promote integration and improve economic results. We must make an energetic effort to organize additional joint automotive corporations and carry on rational readjustment and reorganization.

b. We should strive to increase the number of product varieties, improve product quality, and change the product structure. In connection with gaining maximum economic effect from motor transport, we should actively develop new products, replace older products with superior, low-energy-consumption, and cheap new products, and continuously satisfy market needs. In connection with product innovation, we should do an effective job of technical modernization of light motor vehicle plants and reorganization and modernization of heavy truck plants. We must import needed technologies and equipment and speed up the development of the automotive industry. In addition, we must organize effective diesel research and production and gradually replace some piston-engined cars with diesel vehicles.

c. We should make full use of existing enterprises, particularly key enterprises, in connection with the renovation of products, processes and facilities. We should focus on effective technical modernization of key enterprises and the basic parts industry, use the technical modernization of the enterprises to gradually reorganize the product structure, improve product capabilities and quality, save energy, decrease production costs, and improve production standards, technical standards and management standards.

d. We should develop scientific research and education. In connection with improvement of older products and development of new products, we should upgrade the research and testing base, focus on utilization of funds, and assure the construction of the research base. In education, in addition to continuing to cooperate with advanced schools in running effective automotive curricula, we should also focus on running effective employee higher and intermediate technical schools and vocational schools, so that they send qualified technical personnel to the automotive industry.

e. We should develop exchange of experiences with foreign countries and foreign trade. In connection with technical modernization of the enterprise, we should promote technical interchange and technical cooperation, import advanced technologies and equipment, and gradually increase our exports of motor vehicles and parts.

f. We should thoroughly utilize the favorable moment of readjustment to lay an effective foundation. We should further consolidate the enterprises, strengthen management, carry out comprehensive trial implementation and dissemination of new scientific management methods, organize the training of all employees, and gradually train a technical contingent with a high degree of political consciousness and scientific and technical knowledge.

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## CHINA'S BEARINGS INDUSTRY

Beijing ZHONGGUO JINGJI NIANJIAN (1982) [ALMANAC OF CHINA'S ECONOMY (1982)] in Chinese 1982 pp V 140-V 141

[Article by Zhou Cheng [0719 2052], General Office of Bearings, Ministry of Machine-Building Industry]

[Text] Bearings are basic components for assembly and repair of all types of machine products; they are produced in large quantities, have a wide range of consumers, and exist in many varieties. The rate of development and level of advancement achieved by the national economy and by machine production determine the rate of development and level achieved by the bearings industry, and these in turn affect the precision, performance and service life and other quality characteristics of machine products. In the more than 30 years since the state was founded, propelled by development in industry, agriculture, national defense and the like, China's bearings industry has developed rapidly. Before Liberation, China had only the Wafangdian Bearings Factory and several bearings repair workshops, and bearing production in 1949 totaled 138,000 units. In 1957, following the First 5-Year Plan, China had 11 bearings plants and its annual output was 10.59 million units in 1,000 varieties. Following the Second and Third 5-Year Plans, in 1966 there were more than 40 bearings plants with a total output of 31.13 million units. During the Third and Fourth 5-Year Plan periods, the bearings industry implemented the policies of giving priority support to industry and utilizing both central and local capacities; as construction in the interior and mechanization of agriculture progressed, additional plants and production locations were established, and bearing production expanded greatly. By 1970, output had reached 100 million units, with more than 7,500 varieties in production, and there were more than 400 plants and production locations. By 1975, national output was 160 million units in 9,500 varieties, with a total of 600 plants and other locations. In addition, we imported some advanced equipment and technologies. During this period, as a result of the 10 years' turmoil of the Cultural Revolution, the normal production routine of the bearings industry was greatly disrupted, product quality fell, and economics results were not good. Since the 3d Plenary Session of the 11th Party Central Committee, the bearings industry has implemented the policy of readjustment, reform, reorganization and upgrading, and by the late 1970's and early 1980's, the bearings industry system had 170,000 employees, fixed assets of more than 1.7 billion yuan, and more than 49,000 main pieces of equipment; bearings output was 227 million units, more than 1,600 times the 1949 output. We now produce more than 11,000 varieties of

bearings in 10 major categories. As a result of recovery through consolidation of enterprise management, the quality of Chinese bearings has already reached and surpassed historic best levels. Our bearings industry is a regular member of the Rolling Bearing Technology Commission of the International Standards Organization (ISO/TC4). In terms of precision, Chinese bearings fall into classes G (ordinary), E (high-quality), D (precision), C (high precision), B (higher than C) and ISO classes 0, 6, 5, 4 and higher. We are producing large-size bearings with external diameters of over 5 meters and internal sleeves with a net weight of more than 9 tons, and miniature bearings with internal diameters of 0.6 mm; in addition to producing large numbers of standard general-purpose bearings, we also produce high-speed, high-temperature, high-vacuum, low-temperature, low-friction, low-noise, antimagnetic, corrosion resistant, radiation-resistant and other special types of bearings, along with a variety of English-system bearings. The products are extensively used in the national defense industry, agricultural machinery, light industry, textiles, metallurgy, mining machinery, general-purpose machinery, electrical machinery, machine tools, motor vehicles, railway rolling stock, aviation, steamships, instruments and meters, daily-use electrical appliances and the like.

China's bearings industry has technical personnel with relatively high qualifications. The Loyang Bearings Research Institute is a scientific research organization directly subordinate to the First Ministry of Machine Building which is oriented toward the entire industry. This institute has testing instruments and equipment which are up to international standards, uses adequate production facilities and capabilities, and is responsible for product development, applications, standards setting, materials and heat treatment, processes, and process equipment for the entire industry. It carries on anticorrosion lubricant research and measurement, testing and scientific information work. In addition, there are two local research institutes: the Shanghai Municipal Machine Accessories Institute and the Beijing Municipal Bearings Research Institute. There are four research institutes associated with plants: the Luoyang United Bearings Industry Corporation Research Institute, the Wafangdian Bearings Plant Research Institute, the Harbin Bearings Plant Research Institute and the Xiangyang Bearings Plant Research Institute. Plans are being made to build the Hangzhou Bearings Testing Center. Because the main bearing plants and their research institutes have adequate technical manpower and measurement and testing facilities, they are all capable of carrying out performance and durability testing of bearings and are continuously accumulating information on failure, fatigue, wear and the like to serve as data for improving bearing quality and developing new products, new techniques and new materials.

China currently has 49 state standards applying to bearings and 53 standards issued by the ministries of machine building, in addition to which some enterprises have drafted enterprise standards higher than the state standards. The state standards for rolling bearings, steel ball bearings and needle bearings have been revised in accordance with ISO standards and issued for the entire industry. Owing to the institution of comprehensive quality management and comprehensive enterprise consolidation, product quality has improved continuously and has already reached and surpassed historic best levels. All enterprises are concentrating their effort on the product acceptance rate and

a reserve of precision; they not only are striving to hold the line in quality, but are putting prevention first and guaranteeing proper functioning of processes. As a result of the organization of a special effort on product noise, measurements have indicated that international standards have been approached or equaled; efforts are now being made to steadily increase quality in this area to even higher levels.

In the past, the bearings industry primarily supported heavy industry and did not devote enough attention to the bearings needed by agriculture, light industry, textile machinery and daily-use electrical machinery. As the national economy has been readjusted, the bearings industry has been altering its customer orientation and expanding the range of sectors which it serves. While continuing to serve heavy industry, it is energetically developing the medium, and small-size ball bearings and miniature bearings needed by light industry, textile industry, agricultural machinery and tools, and for expanded export, especially bearings with sealing rings and dust covers and low-noise bearings. It has made an effort to expand the number of varieties, to improve quality, and to increase output in order to better serve all departments of the national economy.

As the economic system is reformed, the bearings industry's enterprises are switching from a focus on production to a focus on management and are taking the initiative in providing user services, expanding the range of sectors served, expanding export of their products, and improving social and economic results. An industry-wide bearings marketing and technical services office has already been established to function as the industry's domestic marketing center and economic information center. It consists of 12 key and backbone enterprises and 16 province, city and autonomous region bearing corporations or specialized corporations, and has had an important effect in domestic bearings sales.

In recent years, export of bearing products has developed rapidly, quantities have been increasing continuously, and there has been a considerable increase in the amount of foreign exchange created. In May 1981, with state permission, the China Joint Bearings Export Corporation was established. This corporation includes 14 key and mainstay plants and institutes and 8 province and city bearings corporations. Our TAM and SW brand bearings have some reputation abroad and have already been sold to 50 countries or areas in Southeast Asia (Hong Kong, Malaysia, Singapore, Thailand and the like), Europe and the Americas.

Currently, all provinces, municipalities and autonomous regions are organizing to promote the principle of amalgamation, and 18 provinces, cities and prefectures have already organized bearings corporations or specialized corporations. These corporations use different management forms in accordance with local conditions; they are gradually altering backward forms involving large and small self-contained plants and are gradually instituting specialization and cooperation. In addition, some provinces are studying the organization of new associations.



China's bearings industry still cannot satisfy the requirements of the four modernizations for several reasons: (1) uneven productive capacities, (2) incomplete and inadequate series of varieties, (3) still-inconsistent product quality, and (4) inadequate economic performance. In the future, we must increase the number of varieties, improve quality, carry out large-scale technical modernization, raise our technical and management standards, and improve economic performance so that after a number of years' effort we can catch up with and surpass advanced international levels.

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## CHINA'S MACHINE TOOL INDUSTRY

Beijing ZHONGGUO JINGJI NIANJIAN (1982) [ALMANAC OF CHINA'S ECONOMY (1982)] in Chinese 1982 pp V 143-V 146

[Article by Beijing Machine Tool Research Institute]

[Text] I. Brief Survey of 30 Years' Development

Old China's machine tool building capabilities were extremely weak. The entire country was virtually without specialized machine tool plants, and there were only a few machinery repair and spare parts plants in cities such as Shanghai, Kunming, Tianjin and Shenyang which produced a few simple machine tools as a sideline. The main user of machine tool output was the machinery repair and spare parts industry. In 1949 the country's machine tool output was only 1,582 units.

In the 3-year recovery period (1950-1952) after the founding of New China, some machinery repair and spare parts plants which had been producing machine tools were consolidated and restructured with the support of the government departments, becoming the first specialized machine tool manufacturing plants and constituting the basis for China's machine tool industry. In 1952 the country's machine tool output had reached 13,740 units; a total of 16 varieties were being produced.

During the First 5-Year Plan period (1953-1957), in order to further meet the needs of domestic development of heavy industry, and particularly the machine building industry, the machine tools industry made a major effort to improve its production technologies and its ability to develop new varieties. Under the leadership of the First Ministry of the Machine Building Industry, using certain specialized domestic machine tool plants as a basis, a rational adjustment toward product specialization and division of labor was carried out and stage-by-stage technical reorganization was instituted, along with various degrees of reconstruction and expansion. At the same time, several new, modern plants were built, such as the Wuhan Heavy Machine Tool Plant and the Qiqihar No 1 Machine Tool Plant. In addition, in order to further improve the design of machine tools, in 1956 China's first machine tool research institute was established. By 1957 China's machine tool industry had 18 specialized machine tool plants and was producing a total of 28,000 units in 200 varieties. But most of the products put into production in this period were imitative general-purpose machine tools.

The main goals of the machine tool industry's progress in production and construction in the Second 5-Year Plan period (1958-1962) were continued expansion of output and energetic development of high-quality new varieties. The principal features of this period were: (1) development of some local machine tool enterprises, and construction of relatively small machine tool plants by certain provinces and cities with funds which they raised themselves; (2) establishment of the Jinan Research Institute of Forging and Pressing Machinery, the Dalian Research Institute of Combination Machine Tools, and the Guangzhou Research Institute of Machine Tools, which were integrated machine tool research institutes, as well as some specialized research institutes subordinate to plants, and strengthening of machine tool design and research capabilities; (3) along with continued expansion of general-purpose machine tools, organization of the production of high-quality products such as large-size, precision, high-efficiency, automated and specialized machine tools; (4) rapid improvement of machine tool design capabilities.

During this period the state placed particular emphasis on mastering the production of high-precision machine tools, and with the support of the higher-level departments, the machine tool industry invested in and constructed several machine tool production bases, so that the industry gradually mastered the production of some 10 categories of precision machine tools, including jig boring machines, thread grinding machines and gear grinding machines. At the same time, it provided most of the general-purpose machine tools and some high-efficiency machine tools, automated machine tools and automated production lines for the automotive, tractor, bearing and internal combustion engine industries, among others. By 1965 the country's machine tool output was 39,600 units, and 550 varieties were in production, including many high-quality, large-size, precision, sophisticated products.

As a result of the two 5-year plans and the 3-year readjustment period, the machine tool trades had 189 plants, in addition to several integrated machine tool research institutes and specialized machine tool institutes, which constituting a machine tool industry production and research system, had gained a preliminary capability to provide sets of equipment to the machine building industry. For example, beginning in 1969, the machine tool industry organized 138 machine tool research and production units nationwide to provide sets of machine tools and equipment for the establishment of the No 2 Motor Vehicle Plant. As a result of 4 years' effort, they provided 7,664 machine tools of 346 varieties for this plant; these included 291 general-purpose machine tools, 501 combination machine tools, 35 automated combination machine tool lines, 6 automated lines for rotary bodies, and 29 heavy machine tools of 15 varieties. As a result, the proportion of Chinese-made machine tools in the No 2 Motor Vehicle Plant was over 98 percent.

During the Third and Fourth 5-Year Plan periods (1966-1976), the machine tool industry continued to implement the policy of giving priority to heavy industrial development and bringing into play both central and local initiative, with the result that there was a great increase in machine tool output. In 1970, the national machine tool output was 138,900 units, and the output of forging and pressing machines was 21,700 units. In 1972, 817 varieties of general-purpose machine tools had been put into production, while there were about 1,100 types of special-purpose machine tools.

Starting in the latter part of the Sixth 5-Year Plan period, domestic demand for machine tools, particularly large-size and precision machine tools, exceeded output; as a result the scale of existing machine tool plants was continually expanded and there was vigorous growth of local machine tool plants. According to incomplete statistics for 1972, there were 372 machine tool plants and 46 forging and pressing machinery plants nationwide. In terms of distribution, all of the provinces and municipalities had machine tool production capacities of various sizes. In 1975, national machine tool output was 174,900 units, and output of forging and pressing machinery was 44,700 units. Output of large-size machine tools increased from 1,490 units in 1965 to 6,152 in 1973, an increase of more than three times. The output of precision machine tools increased from 652 units in 1965 to 1,949 units in 1973, an increase of more than two times. During this period, numerically controlled [NC] machine tools began to move from research and development into production. The number of varieties that had been mastered increased from 8 in 1973 to 46 in 1975.

However, because of the 10 years of turmoil, normal production conditions in the machine tool industry suffered considerable disruption, and in addition there was a drop in product quality. These circumstances continued until 1977, in the middle of the Fifth 5-Year Plan period, when machine tool output reached 198,700 units and output of forging and pressing machinery reached 49,100 units. Half of these were outside-of-plan production. Machine tool output and the cumulative number of varieties in production since 1949 are shown in Table 1.

Table 1. Output of Main Products and Cumulative Number of Varieties in China's Machine Tool Industry, 1949-1981

a 年度	b 产 量(台)				g 累计掌握的 通用机床 品种数(种)
	c 机 床	d 锻压机械	e 铸造机械	f 木工机械	
1949	1,582	300			
1952	13,700	1,100			16
1957	28,000	2,900			200
1962	22,500	3,900		1,890	
1965	39,600	7,600		(1963年)	550
1970	138,900	21,700	3,011	3,648	
1975	174,900	44,700	3,739	7,052	839(1974年)
1980	134,000	48,449	3,988	9,373	997(1979年)
1981	103,000	51,600	3,355	7,049	

Key:

- |                                  |   |
|----------------------------------|---|
| a. Year                          | e. Casting machinery                    |
| b. Output (units)                | f. Woodworking machinery                |
| c. Machine tools                 | g. Cumulative number of general-purpose |
| d. Forging and pressing machines | machine tool varieties in production    |

## II. The Machine Tool Industry During the Readjustment Period

Since the 3d Plenary Session of the 11th Party Central Committee in 1978, as the focus of national economic development was shifted and the readjustment policy was implemented, excess production capabilities and imbalances in

internal product structure were very quickly revealed in the machine building industry, and especially the machine tool industry. Since 1979, the process of implementing the policy of readjustment has involved the following main types of work.

1. Energetic Enterprise Consolidation, Steady Improvement of Product Quality. During the readjustment period, in accordance with the 12 enterprise consolidation standards issued by the First Ministry of Machine Building, the machine tool industry carried out an overall consolidation, centered on product quality, in more than 100 of its mainstay and key enterprises. At the same time, focusing on expansion of enterprise management autonomy and strengthening the economic responsibility system, it systematically restructured the economic management responsibility system in the industrial enterprises and pursued regulation by the market under the guidance of the planned economy, thereby stimulating the enterprises to stress economic results and orient themselves toward the users in their management work. As a result, the problem of a mismatch between production and marketing was corrected.

As a result of efforts by all the plants and a movement for evaluation and comparison of machine tool quality in all branches of the industry, by 1981, 5 machine tool products had won state gold medals for quality, 24 had won silver medals, and 172 product varieties had established a reputation for quality. The number of Class 1 and first-rate products was continually increasing, and product quality was improving steadily.

2. Vigorous Development of Foreign Markets, Expanded Export Trade. China began exporting machine tools in 1957. Machine tool exports expanded rather rapidly in the 1970's. Currently, China sells machine tools to more than 50 countries and areas. By 1979 its machine tool exports had reached 11,500 units (including 6,500 regular machine tools and 5,000 forging and pressing machines), up 35 percent from the 1978 figure. The 1980 export figure showed a further increase.

In recent years, in order to further develop foreign markets, the machine tool industry has taken the following steps

1. It established a machine tool corporation to coordinate production with trade and conduct united foreign trade dealings. In addition, it designated the Shanghai Machine Tool Plant, the Shenyang No 1 Machine Tool Plant, the Dalian Machine Tool Plant, the Kunming Machine Tool Plant, the Ningjiang Machine Tool Plant and the Jinan No 1 Machine Tool Plant, which were relatively powerful mainstay machine tool enterprises, for autonomy in direct management of machine tool export.

2. Production cooperation with relevant foreign machine tool companies has been instituted in such forms as processing orders or compensatory trade using foreign blueprints and foreign materials. To date, production cooperation has been established with 20 name-brand foreign machine tool plants. Fulfillment of the agreements will result in an annual resale of 2,000 machines.

3. It has participated actively in foreign exhibitions. Since 1979, in order to extend the influence of Chinese machine tools in foreign markets, the machine tool industry and foreign trade departments have organized relevant machine tool enterprises to participate in a number of foreign heavy machine tool exhibitions. Some of the more important international exhibitions have been those in Milan, Italy in 1979, in Tokyo, Japan in 1980, and in Hanover, West Germany in 1981. Each of these activities brought in a certain number of foreign orders. In addition, contact with foreign businessmen has given us a better understanding of trends in the foreign machine tool market, which has helped to upgrade China's machine tool products and foreign trade work.

4. We have purposefully imported advanced foreign technologies. Since the development of NC machine tools is a necessary trend in machine tool technology, in order to promote development of NC machine tools in China, in 1980 we imported the complete manufacturing technology for the Japanese Fujitsu FANUC series 5 and 7 NC systems and feed machinery. When put into production in 1981, they will provide steady, reliable NC systems for development of domestic NC machine tools, will raise China's technological level in the NC machine tool field, and will provide components for exports of sets.

3. Improved Product Structure, Readjustment of Consumer Orientation. In recent years, the machine tool industry has done the following work to readjust its consumer orientation and open up domestic markets.

1. It has increased output of in-demand and name-brand products. Because of the shift in the focus of national economic construction, the light industry and textile sectors have a large demand for certain domestic name-brand general-purpose machine tools and medium and small forging and pressing machines from certain domestic producers of name-brand machine tools. As a result, the mainstay plants have changed their consumer orientation and have produced more of the in-demand, superior-quality name-brand products. The production trends for in-demand products of several mainstay machine tool plants are shown in Table 2.

Table 2. Output of In-Demand Products of Several Machine Tool Plants in 1979-1981

厂名 a	产品名称 b	型号 c	产量(台) d		增长率 e (倍)
			1979 年	1981 年	
f 宁江机床厂	单轴纵切自动车床 i		415	1,042	2.51
g 上海机床厂	平面磨床 j	M7120	180	500	2.77
h 沈阳第一机床厂	普通车床 k	CA 6140	16/日 <sub>1</sub>	19/日 <sub>1</sub>	1.18

Key:

- |                     |                                     |  |
|---------------------|-------------------------------------|--|
| a. Plant            | f. Ningjiang Machine Tool Plant     | i. Single spindle longitudinal automatic lathe |
| b. Product          | g. Shanghai Machine Tool Plant      | j. Surface grinding machine                    |
| c. Model            | h. Shenyang No 1 Machine Tool Plant | k. Ordinary lathe                              |
| d. Output (units)   |                                     | l. 16/day; 19/day                              |
| e. Rate of increase |                                     |  |

At the same, some local machine tool enterprises had originally been producing products of the same kinds, but were at a disadvantage compared with the mainstay plants in terms of product quality and production cost, so that they gradually changed direction in market competition. In 1981, total national machine tool output was 103,000 units, of which 80,000 were specified by plan. There had been a considerable drop in the proportion of outside-of-plan output.

2. It has vigorously developed high grade products for the development of heavy industry. In recent years, while readjusting its consumer orientation, the machine tool industry has also vigorously developed certain high-quality machine tool products for heavy industry development which have filled gaps in domestic machine tool varieties. Examples include: (a) the Wuhan Heavy Machine Tool Plant's model C61200 ( $\phi$ 2,000 mm diameter x 10,000 mm) and model C61315 ( $\phi$ 3,150 mm diameter x 16,000 mm) heavy lathes, model C61400 ( $\phi$ 4,000 mm diameter x 20,000 mm) superheavy lathe, model CQ52100 ( $\phi$ 10 meter diameter) vertical lathe, model T6920 horizontal boring and milling machine (milling spindle diameter 320 mm, boring bar diameter 200 mm) and the like; (b) the Chongqing Machine Tool Plant's model YG3780 ( $\phi$ 800) high-precision worm gear hobbing machine; (c) the Beijing Machine Tool Institute's model DG5432 high-precision coordinate electric spark machining unit and model JCS-018 vertical machining center (1,200 x 450 mm); (d) more than 30 newly-developed high-precision machine tools, including the S1-222 precision magnetic-disc lathe, the MGD2110 precision internal grinding machine, a new series of small jig boring and grinding machines, the QG495 large-area optical grating scoring machine, and the like.

3. Special equipment has been provided for the development of daily-use mechanical and electrical products. In the last 3 years, in keeping with their technical characteristics, the various branches of the machine tool industry have energetically developed and furnished high-productivity specialized equipment for expansion of the production of wristwatches, bicycles, sewing machines, cameras and other mechanical and electrical products. For example, in the last 2 years it has provided 23 varieties of equipment to the wristwatch industry, nearly 1,000 units of more than 100 types to the bicycle industry, and 300 specialized machine tools to the sewing machine industry, including 352 units of 27 types whose delivery was scheduled for 1981.

4. It has expanded the repair and refitting of older machine tools. Many machine tool enterprises have utilized excess capabilities to expand the repair and refitting of older machine tools. According to incomplete statistics for 1981, 41 machine tool plants repaired or refitted 725 machine tools, with an output value of 8.25 million yuan. Thirteen mainstay machine tool enterprises repaired 512 precision and large-size machine tools, with an output value of 7.8 million yuan.

5. Simultaneous work on two types of products. During the period of readjustment, a large number of machine tool enterprises have used their extra productive capacities to produce such Category 2 products for light industry, textiles, the foodstuffs industry and the chemical fibers industry, such as weft knitting machines, wool carding machines, cigarette rolling machines, (porcupine) slot cutting machines, chemical fiber spinning nozzles, reamers, injection machine

and the like. In 1981, the textile machinery produced by only 11 machine tool plants totaled 141 units of 18 types; the Beijing No 1 Machine Tool Plant, the Shanghai Machine Tool Plant and the Neijiang Machine Tool Plant manufactured or refitted 77 machines of 10 different types for the light industry; the Wuhan Heavy Machine Tool Plant, the Qinchuan Machine Tool Plant, the Changjiang Machine Tool Plant and the Guibei Machine Tool Plant developed a variety of injection machines with capacities from 45 to 2,000 grams.

### III. Problems and Directions of Future Development

The main current problems are as follows:

1. **Outmoded Products.** Most of the nearly 1,000 varieties of general-purpose machine tools currently being produced by the machine tool industry are 1950's and 1960's products, and only few are at the 1970's level. In 225 machine tool plants, fewer than half can produce technically difficult products. In the last 30 years, and particularly since the beginning of the 1970's, foreign machine tool technology has depended primarily on the development of NC technology, but China's NC machine tool technology is extremely backward. In order to correct the backwardness of China's NC products, we must accelerate the development of NC and precision machine tools and the renovation of large-capacity, large-area products.
2. **Outmoded Production Processes.** China's machine tool industry has long used 1960's production equipment and processes, and few changes have yet been made in them. In recent years we have gradually been taking steps to utilize ISO [International Standards Organization] precision standards. The key processes and measurement and testing methods for products must be technically modernized and manufacturing processes must be continually updated.
3. **Poor Quality and Limited Variety of Parts and Accessories.** Another weak link which is currently harming the development of machine tool varieties and improvement of product quality is the poor quality and limited variety of machine tool parts and accessories. According to statistics, there are about 68 major categories of machine tool-related parts and accessories other than electrical machinery and electrical components. Because of continuous modernization of the primary machines, in the recent product renovation process the weakness in spare parts and accessories has become particularly apparent. Therefore, in order to expand the number of machine tool varieties and improve product quality, it will be necessary to solve this problem.
4. **Low Management Standards.** As a result of the recent readjustment and consolidation and the expansion of management autonomy, machine tool enterprises have generally begun to give more attention to economic results and the use of economic levers for enterprise management. But overall, the machine tool enterprises' organization and management structure are still bloated, vertical and horizontal relations are complex, and the skills of management personnel are still rather limited. There is still a lack of modern industrial tools and facilities such as computers, microform equipment, and communications facilities, as a result of which the efficiency of industrial enterprises is low and the policy-making cycle is long. In order to strengthen plan management and



adapt to the needs of regulation by the market and the expansion of foreign trade, the management situation must be improved.

In the long term, in order to implement the four modernizations, the machine building industry, including the machine tool industry, must carry out technical modernization. A survey of use of facilities and renovation plans of typical Chinese machine building enterprises indicates that machine tools with 20 years' service or more account for more than 30 percent of total machinery holdings. We can forecast that the machine building industry's latent need for machine tools will come to the fore as technical modernization tasks are undertaken. The machine building industry must thoroughly utilize the current period of readjustment to energetically organize the study of advanced machine tool varieties, to renovate old products, and to make a new contribution to the machine building industry's technical modernization and to continuous expansion of export.

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## NEW PROGRESS IN CHINA'S FARM MACHINERY INDUSTRY AND AGRICULTURAL MECHANIZATION

Beijing ZHONGGUO JINGJI NIANJIAN (1982) [ALMANAC OF CHINA'S ECONOMY (1982)]  
in Chinese 1982 pp V 161-V 164

[Article by Long Jiyan [7893 1015 6056]]

[Excerpts] In 1981 the farm machinery industry was in a transitional stage under the new circumstances of readjustment of the Chinese economy and implementation of the production responsibility system in the countryside. In order to adapt to this new situation, at the beginning of the year the relevant departments stated that the agricultural machinery industry must implement the "four changeovers": (1) changing the guiding ideology of blind pursuit of speed of agricultural mechanization, adherence to the principle of acting in terms of local conditions and capabilities, and focusing on economic benefits; (2) moving away from the approach of "bureaucratic industry" and "bureaucratic commerce" in the farm machinery industry and establishing a market-oriented, management-oriented, user-oriented outlook; (3) a change in management scale and methods, a focus on management of agricultural machinery by the production team, and permitting management by associations of households or individual households; (4) changing the product structure, expanding the range of sectors served, and energetically expanding the proportion of small-size agricultural machinery produced. In 1981 the total output value of the agricultural machinery industry was 6,789,000,000 yuan, 101.4 percent of the annual plan quota, down 13 percent from the 1980 figure of 7.7 billion yuan. Among the main agricultural machine products, hand tractors, internal combustion engines, internal combustion generator units, mechanical plant protection machinery, manual sprayers, rubber-tired wheelbarrows, agricultural pumps, tractor and internal combustion engine parts met or exceeded plan quotas (see Table 1). The output value of nonagricultural machinery was 850 million yuan, or 12.5 percent of total output value, up 21.4 percent from 1980. The agricultural machinery enterprises realized a net profit of 189 million yuan for the year, exceeding estimates.

Table 1. Production of Main Agricultural Machine Products in 1981

		Annual plan	Actual output	Completion percent	Compared to previous year
Total industrial output,	10 <sup>8</sup> yuan	66.93	67.89	101.4	87
Nonagricultural machinery,	10 <sup>8</sup> yuan	9.97	8.5	85.3	121.1
Tractors		57.650	52.022	90.2	52.9
Hand tractors		188.300	193.107	102.6	90.8
Internal combustion engines	10,000 hp	1,764.41	1,774.61	100.6	82.7
Internal combustion generators	10,000 kw	20.75	24.47	117.9	36.8
Machine-drawn plows		23.565	21.775	92.4	57.5
Machine-drawn harrows		20.910	15.970	76.4	69.1
Machine-drawn seeders		14.660	14.225	97	59.2
Large trailers		44.900	38.530	85.8	53.5
Combines		6.300	5.861	93	99.4
Power threshers		157.450	118.379	75.2	115.3
Driers		2.900	851	29.3	
Power rice seedling planters		1.260	1.406	111.6	31.0
Power plant protection equipment		67.415	70.316	104.3	112.5
Hand sprayers	10,000	612	656.83	107.3	136.8
Rubber-tired wheelbarrows	10,000	926	979.51	105.8	151.9
Agricultural pumps		347.550	470.743	135.4	103.6
Mowers		1.250	1.104	88.3	66.8
Balers		260	85	32.7	212.5
Towed fodder cutting machines		120	50	41.7	125.0
Poultry-raising sets		870	1.146	131.7	350.5
Tractor parts, 100 mil.		16.90	16.91	100.1	81.9

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## CHINA'S ELECTRONICS INDUSTRY IN 1981

Beijing ZHONGGUO JINGJI NIANJIAN (1982) [ALMANAC OF CHINA'S ECONOMY (1982)] in Chinese 1982 pp V 166-V 169

[Article by Policy Research Office, Fourth Ministry of the Machine Building Industry]

[Text] In 1981, the electronics industry continued to advance during the process of readjustment and made an effort to achieve new progress on a changing base.

During the year, the leadership at all levels of the electronics industry departments and all employees conscientiously implemented the major policies of further economic readjustment and further political stability announced by the party Central Committee and conscientiously implemented the major directive of the State Council leadership that the electronics industry must "carry out the three activities effectively and carry out the two slogans" (i.e. effective work in readjustment, organization and amalgamation; effectively link research to production, effectively produce electronics parts and components; eliminate difficulties and make breakthroughs). While focusing on readjustment, it persisted in combining military and civilian production, opened up extensive avenues, improved management, strove to develop new products and improve product quality, steadily pursued reorganization, amalgamation and system reform, and achieved good results in all of these areas. The electronics industry has begun to develop consistently and in healthy and coordinated fashion.

1. Significant Progress Through Readjustment of Product Structure. The electronics industry's responsible departments and enterprises everywhere carried out the policy of combining military with civilian production and made further efforts at readjustment of the product structure, achieving good results in developing saleable, usable products. In 1981 the electronics industry's civilian products accounted for 89.1 percent of total output value, up 17.2 percent from the previous year; among these products, the civilian products output of ministry-subordinate enterprises accounted for 64.2 percent of total output value, up 89 percent from the previous year. Because the product structure is becoming more rational, enterprise adaptability was increased and production plans were fulfilled ahead of schedule. Total output value was 2.17 billion yuan, 111.5 percent of plan, up 7.95 percent from the previous year. There was a rather considerable increase in the output of consumer electronics

products compared with the previous years: the industry produced 5,394,000 television sets, an increase of 1.2 times; 40.57 million radio receivers, an increase of 35 percent; and 1,546,000 tape recorders, an increase of 1.08 times. Ministry-subordinate enterprises increased their output of electric fans by 1.79 times and their output of washing machines by 6.5 times. Some 980,000 electronics products were produced for the various departments serving the national economy, a slight increase over the previous year. There was progress in the promotion and application of computers, and some applications projects which had promise for dissemination were developed in energy, light industry and textiles, and enterprise management. There was a steady increase in output of basic electronics products: the industry produced 31.37 million vacuum tubes, 129 percent of the plan quota and an increase of 13 percent from the previous year; 927.74 million semiconductor components, 132 percent of plan and up 37 percent from the previous year; and 6,483,000,000 radio components, 111 percent of plan and an increase of 37 percent from the previous year. Because of decreased demand, the output of integrated circuits, radio instruments and special equipment decreased, but output of these products was 105, 144 and 211 percent respectively of the plan targets.

Many provinces, municipalities, autonomous regions and enterprises completed their state plan quotas ahead of schedule. Shanghai, Jiangsu, Beijing, Liaoning, Shandong, Zhejiang, Tianjin, Guangdong and Hubei, which are electronics industry bases with a relatively good foundation, all maintained a respectable rate of growth. Output value and profits also increased rather rapidly in provinces with not as strong a foundation: Anhui Province increased its output value by 37 percent and doubled its profits; Guizhou increased its output value by 47 percent and increased its profits by 3 times; Sichuan increased its output value by 50 percent and increased its profits by 60 percent. Seventy enterprises under the ministry had good economic results and made a fairly large contribution. Some enterprises located in the interior and mountainous regions managed to make breakthroughs and overcome a variety of difficulties, producing marketable, usable products and establishing themselves in competition.

2. Strengthen Scientific Research Work and New Successes in Trial Production of New Products. In accordance with the general policy of using science to serve production and national defense modernization, a key effort was made in basic electronic products; general-purpose production technology, research in the main civilian electronics products, and disseminating and applying scientific research results. Results were evaluated and selected in 13 special fields, including radar, computers, communications, lasers and infrared technology, and meters and instruments; 114 outstanding research results were selected.

More than 900 research efforts and new trial-produced products were evaluated and their designs finalized; more than 160 proved to have reached a high level, while some projects filled gaps. The electronic equipment provided for the Shijian No 2 satellite made a contribution to the launching of three satellites with a single launch vehicle. There was new progress in 16K MOS [metal-oxide-semiconductor] dynamic random-access memory [RAM] and a new type of CMOS

[complementary MOS] large-scale integrated circuit [LSI], and LSI circuitry for 8-bit computers is now generally available. Long-wave optical-fiber color television and videotelephone modeling systems have reached a rather high level. Centimeter-wave network analyzers have had their designs finalized. Dual-gate and single-gate field effect transistors have passed the 12 kHz and 18 kHz barriers respectively, with noise parameters of 5 and 4.5 dB respectively, close to advanced international standards. Some 600-kV high-energy ion implantation devices, electron irradiation devices and ion beam etching devices and similar sophisticated micromachining equipment have been developed and put into regular use. There has been new improvement in computer system reliability, software capabilities have been considerably expanded, internal and external capacities have been increased, and new structures and processes have been adopted. The 8-bit single-chip microcomputers totally produced in China have been evaluated and their designs have been finalized; they have steady, reliable performance.

3. Institution of Comprehensive Quality Management, Further Improvement of Product Quality. The enterprises have extensively developed product quality management group activities, and according to incomplete statistics, more than 5,355 product quality management groups have been founded, of which 14 have been rated as national superior quality-management groups. According to statistics on 747 quality management groups, they have created or saved more than 21 million yuan in economic value. In order to improve the job capabilities of quality management group members, 9 comprehensive quality management training classes have been held, training 855 key personnel.

Electronics product quality evaluation and key quality upgrading efforts have been continued, and attention has been devoted to the use of current international standards, which has resulted in improved product quality and reliability. Thirteen electronics products have won state silver medals, and 42 have won ministry-level superior-product awards. In basic products evaluation and comparison, 76 plants (or products) have been rated as superior. In the national television quality evaluation, 22 models had a mean time to failure exceeding 4,000 hours. Of complete devices included in the plan, 188 or 81 percent were rated in class 1, while 16 radars, altimeters, radiocompasses and transceivers rose from class 2 to class 1. Key efforts in electronic components quality yielded results: the optoelectronic parameters, picture quality and service life of 12-inch black-and-white picture tubes has matched or come close to international standards. Product quality efforts for 87 low-temperature ( $-55^{\circ}\text{C}$ ) components resulted in successful meeting of use requirements by 84 of them. The reliability of the special electronics parts and components provided for carrier rockets and satellites was further improved, and the utilization rate was 95 percent or higher.

4. Determined Shrinking of the Capital Investment Front, Good Completion of Key Construction Projects. In 1981 the electronic industry's capital construction investments dropped by 31.6 percent from the previous year, and in order to assure completion of key projects, further shutdowns, mergers or changes of production were undertaken, thus decreasing the scale of capital construction. Following terminations or slowdowns of 10 projects in 1980, construction of 2

additional plants and 1 research institute was terminated or slowed down in 1981, and corresponding shutdowns, mergers or changes in production were made on certain medium-and small-sized projects. As a result of readjustment, the proportion of investments allocated to key projects increased from the previous year, with a 20.4 percent increase in employee housing construction, a 2.2 percent increase in scientific research project construction, and a 1.5 percent increase in school and other educational construction, while importation projects were continued in accordance with need. By the end of the year, 90 percent of the capital construction investments had been carried out, and the completed construction totaled 695,000 square meters; there was an improvement in employee housing and production and research conditions.

Progress in key capital construction projects was rather rapid, and they were completed effectively. The Shanxi Color Television Tube Plant, a key state import project, was begun in April 1979, and by the end of 1981 the motive power, fluorescent powder, shadow mask, glass and assembly sections had been basically completed and they had gone into trial operation; in October, trial production of 14-inch and 22-inch color television picture tubes meeting standards began, and small-series production was begun. In the case of the Wuxi's Jiangnan Radio Equipment Plant's imported color television linear integrated circuit project, the exterior engineering and main plant buildings have already been completed, and the last process equipment is being installed and adjusted. The equipment for Changsha's Shaoguang Electrical Plant's imported chromium-plated sheet production line has already been installed and adjustment is under way. Construction on key local electronics industry projects such as the Shanghai Light Bulb Plant's imported black-and-white picture tube line, the Suzhou Television Components Plant's imported horizontal output transformer production line, and the Dandong Television Components Plant's imported high-frequency head production line have been completed and gone into production; all have yielded good economic returns.

5. Breakthroughs in Structure Reform, New Progress in Enterprise Reorganization and Combination. In accordance with the directive of the State Council leadership on linking scientific research with production and carrying on effective combination work, readjustment and reform of the organizational structure of the ministry and the research academies have been carried out. The Radar Production Technology Bureau and the Electronic Components Production Technology were used as the basis for establishment of the Radar Industry Management Office and the Electronic Components Industry Management Office, and a beginning was made in combining relevant research academies; the Communication and Navigation Production Technology Bureau and the Communications Engineering Research Academy's communications research departments were combined with the General Office of the Broadcast and Television Industry, establishing the General Office of the Communications, Radio and Television Broadcasting Industry; the computer science departments of the Communications Engineering Research Academy were merged into the General Office of the Computer Industry. This was the first step to creating a new management system which united research and production.

Following consolidation and upgrading, some new economic combinations have gradually been established. The Nanjing Radio Corporation has developed in

healthy fashion. It established a trans-province association with several electronics industries in Jiangxi, thus establishing a Jiangxi branch. While consolidating and improving the 100-series software centers, the computer industry also established the South China Computer Corporation and the North China Terminal Equipment Corporation and began plans for the China Magnetic Recording Corporation and the Jiangsu Computer Industry Corporation. The Ministry's Tianjin Radio Plant and Tianjin Broadcast Equipment Plant and 28 local electronics plants in Tianjin City combined, establishing the Tianjin United Radio Corporation. Preparations for the Chongqing Electronics Corporation, established by the ministry's Chongqing Radio Plant and Chaoyang Radio Plant and Chongqing's local electronics plants, are well under way. In addition to establishing united corporations, the following types of associations have been developed. (1) Joint capital operations. The ministry's Northeast Commodity Supply Corporation and the Dandong Electronics Aluminum Foil Plant established a joint capital operation, and Shanghai and Fujian are jointly operating a plywood plant. (2) Joint production. Some of the ministry's special equipment plants have united to produce thread cutting machines; the Liaoning Province Electronics Industry has organized joint production of high-frequency heads, plastic sealing tubes, and double variable capacitors. (3) United production of name-brand products at an expanded number of locations. Production of Shanghai's Haiyan brand radio receiver has spread to Fujian; the original producing plant sent technical personnel, provided technical data and organized production according to the original production standards and process requirements. (4) Uniting of research and production. The ministry's Research Institute of Integrated Circuits and the Beijing Dongguang Electrical Plant have united to produce LSI integrated circuits, while the ministry's North China Computer Research Institute and Harbin No 3 Radio Plant have united to produce the DJS-6 model II computer. (5) Uniting of sales activities. Eleven of the ministry's instrument plants organized joint marketing stores in Beijing and are developing toward joint production and joint marketing; six of the ministry's components plants in Beijing also established joint sales organizations. In addition, some finished-product plants and certain components plants have united to supply complete sets, and so on. These various types of combinations have effectively improved enterprise organization and have helped to vitalize the economy and improve economic results.

6. Improved Management and Marketing Work, Consolidation and Expansion of the Electronic Products Market. As the market economy has become more lively, the responsible electronic industry departments at all levels and all enterprises have given due attention to management, sales and technical services, and, under the guidance of the state plan, have actively made use of market regulation as a supporting factor. Many leadership comrades have personally investigated the market situation, and the past "bureaucratic industrialist" and "bureaucratic merchant" attitudes of waiting for work, relying on contracted sales, and waiting for customers to make the first move, as well as the traditional habit of concentration on production management and ignoring sales management, have been largely corrected. There has been clear progress in the following areas.



a. An effective sales organization has been established and the sales networks have been expanded. The Radio Equipment Corporation has made plans for marketing centers in the central south and northeastern regions, and is actively planning for one in the southwest, in addition to beginning the construction of a sales network centered on the marketing centers. The province, municipality and autonomous region electronic products sales networks have also developed considerably. In connection with industry readjustment, Heilongjiang switched province-run plants with insufficient work to sales and maintenance services and established 79 sales outlets, a first step toward establishing a province-wide electronics products sales and service network, thus increasing the sales of electronic products.

b. Due attention has been given to market research, and product publicity has been strengthened. In order to carry out effective market forecasting, the Radio Equipment Corporation organized a market intelligence organization and took steps to establish an electronics industry market intelligence network. It published the newspaper DIANZI CHANPIN SHANGQING [ELECTRONIC PRODUCTS MARKET CONDITIONS] for internal consumption and DIANZI SHICHANG [ELECTRONICS MARKET] for external consumption, and organized personnel to conduct surveys and analysis of demand in such large-volume, wide area sales markets as television sets, radios and tape recorders, providing timely information on market dynamics which was closely followed and well received by the relevant parties. Many enterprises and corporations not only carry on market research, but also hold exhibitions or use radio, television, newspaper and magazine advertisements to strengthen their product publicity and expand the influence of electronics products.

c. A multiplicity of flexible marketing techniques were used and stress was laid on technical services. At present, not only is the marketing of electronic products carried out by procurement and distribution by the commercial departments, but the equipment departments engage in extensive commission purchase and sale, and the enterprises carry out exhibition sales, joint marketing, and sales in their own retail outlets, so that marketing is becoming increasingly lively. In 1981 the Radio Equipment Corporation signed commission marketing agreements with 778 enterprises and performed a large amount of commission procurement work (it signed supply agent agreements with 290 customers for integrated circuits alone). The local enterprises' sales management is even more vigorous, and many enterprises ship their products directly to the countryside for sale, which has been welcomed by the peasants. While making an energetic effort in marketing, they have all given due attention to technical services, not only expanding their number of repair service locations in large- and medium-sized cities, but also beginning to extend technical services to plants, mines and county towns.

d. A new situation is beginning to be created in producer electronic goods marketing. In 1981 the Communications Engineering Corporation took on 17 communications system engineering projects for the communications system, of which 9 projects, including ultra short wave communication networks for the Changchun Motor Vehicle Plant, railroads and the Beijing Heat and Power Corporation, shortwave communications at Longyangxia for the Ministry of Electric Power,

radio dispatching communications for the Maanshan Iron and Steel Company's mines, digital microwave communications and the like for the Jiangxi copper base, have been completed, while 8 more have been largely completed or are in full swing in accordance with contract requirements. Some enterprises manufacturing producer electronic goods have taken the initiative in offering services and have gone to various departments of the national economy and their subordinate enterprises to learn about their situation and take on work for them. The ministry has also organized some of its enterprises to visit the enterprises under the Ministry of Petroleum Industry to conduct surveys. They are studying specific ways of taking on orders for instruments and equipment which they are capable of manufacturing.

The price departments have done a great deal of work to master and establish price policy. In accordance with output, stocks, and the market supply and demand situation, they have decreased the price of television sets and radios, which has promoted sales and made material benefits available to the masses.

7. Enterprise Consolidation and the "Three Learning" Activities Promote Improved Economic Results. Enterprise consolidation has primarily been organized by the localities in accordance with the Party Central Committee and State Council requirements. Responsible departments at all levels have undertaken energetic consolidation of key enterprises in relation to their specific problems and with specific emphases. They have carried on work in four main areas. (a) In connection with developing the ranks of cadres, they have undertaken the consolidation of some enterprise leadership groups and have surveyed conditions in leadership groups in 55 ministry enterprises and other organizations, readjusting 44 such leadership groups following consolidation, and have proposed tentative programs for groups which require consolidation and readjustment in the future. (b) In connection with opposition to unhealthy styles, they have undertaken the consolidation of financial and economic discipline, established an extensive financial overseer system, strengthened financial oversight, investigated transactions that were inconsistent with the financial and economic system, examined cases of violation of financial and economic discipline, and issued criticisms and taken corrective steps; under the unified command of the State Council, they have carried out a major inspection of financial and economic discipline. (c) In keeping with the spirit of the State Council directive prohibiting indiscriminate awarding of bonuses, they have undertaken to reorganize the bonus system, have strictly examined and controlled the awarding of bonuses in relation to the enterprise production plan and the degree of fulfillment of technical and economic indicators, and have increased the amounts of bonuses issued in 36 ministry enterprises which had done particularly well in task fulfillment and made major contributions. They criticized units that had issued excessive bonuses and dealt stringently with them, and undertook the drafting of labor quotas in connection with the evaluation system and bonus determination methods. (d) In connection with improving economic results, they actively instituted the economic responsibility system. Various types of economic responsibility systems were implemented in 65 ministry enterprises with expanded autonomy and individual project profit contracting, resulting in marked economic effectiveness; in 1981 the profit realized was 23.4 percent above plan. The ministry also sent working groups to make a vigorous effort to turn several money-losing enterprises into money-making ones. The plans for the Dazhong Machinery Plant in Taiyuan, Shanxi,

and the Xianyang Radio Equipment plant originally called for losses of several million yuan, but as a result of consolidation they realized a profit.

Starting in the second half of last year, the electronics industry system also complied with the national industry and communications conference's requirement to learn from Shanghai, the coastal region and advanced units and to focus on light industry, textiles and electronics: they energetically carried out "three learning" activities. They organized 200 enterprise visits and a total of 800 individual visits to Shanghai electronics industry enterprises to learn from their counterparts, and as a result of the energetic support of the Shanghai Instruments and Electronic Communications Industry Bureau, the units taking part in these activities learned advanced management techniques and technologies and realized major economic effects. For example, the Henan Province Electronics Industry Bureau organized five plants to learn from Shanghai, and with the result that three of them began to show a profit and the other two increased their profits severalfold. The General Office of the Communications, Radio and Television Broadcasting Industry and the China Electronics Industry Corporation and the general National Defense Trade Union organized a "national television set industry interplant competition" and a "national picture tube industry interplant competition," focused on improving product quality, decreasing production costs and improving economic management. They made the rounds of each other's plants for mutual assistance and learning from one another and broke through technical blockade. Each made up what the others lacked, and they made joint efforts to break the barriers and disseminated new technologies, new materials, new processes, new equipment and advanced management methods, which greatly helped decrease the cost and improve the quality of television sets and picture tubes.

8. A Multiplicity of Flexible Types of Trade, Opening Up New Prospects in Import and Export. In order to improve export, the China Electronics Technology Import and Export Corporation focused on export and has already reaped the benefits. In 1981, it signed 587 export contracts with more than 30 countries and areas for a total of \$61.44 million in business, 219 percent above the plan quota. During the year it realized \$22.7 million in foreign exchange and overfulfilled the foreign exchange plan quota. In addition, it joined with other departments to export sets of electronic equipment with a total value of \$41 million, realizing \$29 million in foreign exchange. The number of varieties exported increased. The export products structure gradually shifted from basic products to finished units, and from low-grade to high-grade products. Some name-brand products have been well received by foreign customers and have established a certain reputation internationally.

In order to expand the export of electronics products, we have undertaken export of specialized electronic equipment under the form of technical cooperation with Hong Kong businessmen, and have developed or copied 12 varieties of specialized electronic equipment, including multi-blade cutting machines and vacuum electron impact welding machines, which have equaled advanced international standards for comparable products.

In import work we persisted in supporting the technical modernization of the electronics industry, expansion of production and the strengthening of scientific research; new achievements were made in these areas. In 1981 the China Electronics Technology Import and Export Corporation imported a total of nearly 190 million yuan worth of imports. It signed 36 technology import contracts and agreements. In addition, under a variety of flexible trade forms, such as processing and assembly of foreign materials and parts, compensatory trade, cooperative ventures and joint capital ventures, it imported many advanced production lines equipment and instruments. It established over 20 electronics factories in the Shenzhen Special Economic Zone, including the Xinhua Corporation, the Huaqiang Corporation, the Aihua Corporation, the Jinghua Corporation, and the Shenzhen Radio Plant, which were jointly run with Hong Kong businessmen. It has also signed agreements to build the Hengwei, Zhongfeng, Fahua and other jointly-run electronics enterprises. These forms produce mutual benefits and have attracted widespread interest in China and abroad. Several new cooperation projects are being actively discussed.

In general, during 1981 the electronics industry had scored major achievements, but there still remain some problems. First, economic results were inadequate. The electronic industry's total output value nationwide was up 7.95 percent from the previous year, but profits dropped by about 10 percent. Second, in some cases plan guidance was ignored. Some production facilities for electronic products, such as radio receivers, have been rashly expanded and are producing these products blindly, turning out large numbers of low-grade goods, so that overstocks result. There is also blind duplication in technology import and equipment export. Third, management ideas are incorrect in certain areas and enterprises, and some units are purchasing large quantities of foreign parts and assemblies to assemble items for sale within the country, which damages the market. Some are even engaged in smuggling and are evading taxes.

The requirements for the electronics industry in 1982 are that it conscientiously implement Comrade Zhao Ziyang's 10 guidelines for economic construction which were enunciated at the Fourth Session of the Fifth National People's Congress, focusing on improvement of economic results, and make a major effort in all types of work. The plan calls for the electronics industry to have a total output value of 21.85 billion yuan; including a 10 percent out-of-plan market-regulated component, a total growth rate of 5 percent should be assured while striving for 6 percent. A steady growth of output must be achieved; this must be an "unwatered" growth rate with good product quality, saleable products, and high economic results. Economic results should be approached from eight angles: (1) adhere to the policy of combining civilian and military production, continue to adjust product structure, and seek results by making products saleable and usable and increasing conservation; (2) strengthen scientific research, energetically develop new products, and strive for results by speeding up product renovation and upgrading and expanding the range of customers served; (3) combine work in a selected unit with work in an area, give guidance by classification, consolidate enterprises stage by stage and group by group, and strive for results by improving management and utilizing enterprise potential; (4) carry out comprehensive planning, focus

on the key elements, intensify technical reform, and strive for results by improving production efficiency and upgrading production technology; (5) conscientiously summarize experience, carry out effective reorganization, combination and structural reform in the electronics industry, and strive for results by increasing the industry's aggregate production capabilities and improving work efficiency; (6) straighten out management ideas, carry on effective marketing, and strive for results by vigorously expanding domestic and foreign markets and effectively linking production and sales; (7) run good academies and schools, strengthen employee education, and strive for results by strengthening the employee qualifications and improving the technical, job-related and management level of cadres; (8) attack illegal activities in the economic sphere, rectify management styles, and seek benefits from correctly opening up to foreign countries and invigorating the domestic economy. While ably constructing a material culture, energetically strengthen ideological and political work, and carry out effective construction of socialist spiritual culture. Make the electronics industry achieve good economic results and achieve sustained, steady, healthy development.

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## CHINA'S COMPUTER INDUSTRY

Beijing ZHONGGUO JINGJI NIANJIAN (1982) [ALMANAC OF CHINA'S ECONOMY (1982)]  
in Chinese 1982 pp V 171-V 173

[Article by survey and research group, General Office of the Chinese Computer Industry]

[Text] China's computer research, production, and applications began in the mid-1950's. In 1956, the document, "12-Year Plan for Scientific and Technical Development," drafted personally by Premier Zhou, named computers as one of the focuses of scientific and technical development and began preparations for the construction of China's first research institute of computer technology. In 1958 China developed its first vacuum-tube digital computer. In 1959, China used a domestically-produced computer for its first task, blueprint calculations for an underground aqueduct in northeast China. In 1965, Beijing, Tianjin and Shanghai developed and produced a second-generation semiconductor computer with discrete components and began small-scale production. In 1970, China successfully developed a third-generation small-scale integrated circuit (SSI) computer. During this period, many departments and localities in China had established computer research institutes, plants, computer stations or centers and the like, and many advanced schools and academies had started departments and curricula in computer science and engineering, training large numbers of specialized technical personnel and sending them into research, design, production and applications departments.

In 1973, after summing up the lessons of more than 10 years of development, the China computer industry announced the policy of focusing on medium- and small-size computers, widespread utilization, and development of series products; this was the beginning of China's development of computer series. In August 1974, a historic national conference of computer experts was held, at which the trends in international computer development were analyzed, China's policies and long-range plans in computer development were discussed, and the policy that China's computer development and production would focus on series development, general-purpose computers and standardization was further clarified. In the same year, the DJS 130 small multifeatured general-purpose digital computer, jointly developed by Qinghua University, the Tianjin Research Institute of Radiotechnology, and the Beijing Computer Plant No 3, first underwent evaluation, after which it went into production in Beijing, Tianjin, Shanghai, Jiangsu, Shandong and elsewhere. Not long after, the DJS 100 and 180 small-size computer series, the DJS 200 large and medium-sized computer series, the

DJS 050 and 060 microcomputer series and the DJM 300 analog computer series were developed and put into use. These series borrowed many of the advantages of foreign computer series with mature technology, abundant software and extensive applications, while maintaining system software compatibility.

Since 1979, China's computer industry has developed considerably as a new industrial branch. By implementing the policy of readjustment of the national economy, expanding enterprise autonomy and strengthening market regulations under plan guidance, domestic computer production has made new progress in product quality, system configurations, software, performance-to-cost ratio, technical services, and commercial production. For example, the DJS 100 series minicomputers currently include the batch produced DJS 101, 110 (112), 130 (131, 135) and 140 models, of increasing grade, while production of the second-generation DJS 132 and 153 models has already begun. The mean time to failure [MTTF] of the mainframe has already gone beyond the past figure of 50 hours to reach more than 1,000 hours; the system configuration possibilities have been increased from the past "three old-fashioned peripherals" (optoelectronic input device, output punch and teletypewriter) to more than 20 varieties; system software has gradually been perfected, and a certain amount of applications software has already been accumulated; the price has been lowered considerably, and the performance-to-cost ratio has been increased by a factor of 10, so that it is now the Chinese multipurpose minicomputer system produced in the largest series and with the largest number of users. In order to strengthen applications development and technical services and to exchange applications and technical results, in 1980 China established the Computer Technical Services Company and established software centers for the various computer series in Beijing, Tianjin, Shanghai and Liaoning, and set up a nationwide DJS 100 series user cooperative with local branches in Shanghai, Beijing, and the central south, northeast, northwest, north China, east China and southwest regions.

Currently the China computer industry has begun to take shape and has developed a relatively complete initial system of vocations, including research and design, manufacturing and production and user services. Regional computer industry companies (or preparation groups), have been established in Beijing, Tianjin, Shanghai and Nanjing, and the State General Office of the Computer Industry has established a jointly-managed South China Computer Company in Guangzhou and the North China Terminal Equipment Company in Baoding, Hebei. According to statistics, there are a total of 124 computer enterprises and services directly subordinate to or reporting to the State General Office of the Computer Industry, with more than 70,000 personnel and an annual production capacity of 800 large, medium and small computers; between 1958 and 1980, the China computer industry system has produced a total of 2,615 large, medium and small computers and 41,225 peripheral devices. In addition, the Chinese Academy of Sciences, certain large specialized academies and schools, and machine-building and similar departments have certain capabilities for developing and producing computers.

According to incomplete statistics, as of the end of 1981, other than Tibet, every area in China had computers installed, including about 3,200 large, medium and small computers and more than 2,000 microcomputers, of which about

## Computers Installed in China

<u>Department</u>	<u>Total computers installed</u>	<u>Imported computers installed</u>
Energy	251	34
Light industry, textiles, chemical engineering	190	17
Transport, posts and telecommunications	202	35
Agriculture, forestry, meteorology	21	4
Metallurgy	260	130
Construction and building materials	29	--
Machine building	579	78
Electronics	245	18
Science and education	528	57
Culture and health	113	3
Geophysics	101	33
Commerce, planning, statistics	93	69
Other	316	93
Total	2,928	571

- Note: 1. Data are from the Research Institute of Popularization and Applications of Electronics, Technology, Fourth Ministry of Machine Building.
2. Data cutoff date, April 1980.
3. Information in the table is for large, medium and minicomputers; microcomputers are not included.

500 had been imported from abroad. Initially, China's computers will be used primarily for sophisticated defense engineering and scientific research computations, then their applications will gradually be expanded to such areas of the national economy as energy, metallurgy, machine-building, communications, chemical engineering, light industry, meteorology, banking, agriculture and medicine and education; they are currently playing an increasing role in such areas as scientific computations, engineering design, data processing, office management and process control.

In 1981, the China computer industry focused on broader use of computers, expanded the range of sectors it served, readjusted its product mix and its technical contingent, and strove to remodel its backward industrial base; it has achieved new successes in all of these areas. In 1981, the total output value of the computer industry system was 611 million yuan, and 137 large, medium and small computers and 3,581 peripheral devices were produced. Both output and output value were somewhat lower than in 1980. A total of 1,167 microcomputers and single-board computers were produced, about 20 times more than in 1980, and 616,000 pocket calculators were manufactured, 17.8 percent more than in 1980.



1. A focus on extensive computer applications, and active development of new applications areas. In 1981, on the basis of the new situation and new circumstances which had emerged in the period of readjustment, the China computer industry announced that it would shift its direction of development from the past focus on development and production to broader use and wider applications, and would change the course of its services from the former primary focus on sophisticated state engineering projects to five areas, namely technical modernization of the national economy, improvement of management and increased economic benefits, national defense development, development of science, education, culture and public health, and raising the people's standard of living.

Computer applications development projects have made considerable progress. In 1981, key development departments of the national economy focusing on energy, light industry and textiles, communications, education, and medicine developed a series of computer applications projects with applications potential for popularization. According to preliminary statistics, the China General Office of the Computer Industry system has taken on 299 applications projects, of which 55 are designated as key projects for popularization. Through the efforts of large numbers of scientific and technical personnel, some projects have already been evaluated, such as a computer-laser editing and typesetting system which handles Chinese characters, a computer loom monitoring system, a DJS 130-based multiterminal instructional system, a multi-user service system, a micro-computer pulverizer group monitoring system, an electricity consumption control system for an aluminum-plant electrolysis bath, a rolling mill constant-temperature furnace control system, an automatic computer system for cotton procurement, and the like. Some products have achieved phased results, such as computer assistance to an enterprise management system, a computerized coal mine gas monitoring system, a Chinese-character information retrieval system, an automatic rolling mill control system, a computerized multiterminal Chinese-medicine diagnosis system, computerized automated electrocardiogram diagnosis system and the like. In addition, a computerized automatic report forwarding system, an automated bank statement coupling system, an automated timber volume calculating system, an automated integrated circuit testing system, a system for jacquard weaving of manmade fleece, an oilfield storage and transport management system, and a microcomputer-based control system for rotary process printing on thin plastic film have gone into operation or pilot operation. The Zhejiang area has also achieved gratifying results in using computers to forecast agricultural pests.

Some of these computer applications are technically advanced, and some have obtained large economic benefits in actual use. For example, the computer-laser Chinese-character editing and typesetting system jointly developed by Beijing University and the Weifang Computer Plant, Shandong, was a high-multiple compression technique for the information about the shapes of the characters (on average, a single character is compressed up to 12 times, or, in the case of headline characters, up to 500 times), high-speed restoration of character shape information and rapid automatic size alteration of 11 types of headlines; it has special applications software for large-scale typesetting (about 140,000 instructions), so that Chinese characters can be stored in computer memory in digitized form, which completely eliminates lead type. This system is highly efficient and requires only 100 seconds to output a

plate the size of a BEIJING WANBAO page. Workers in this field both in China and abroad all believe that the system is at a rather high technical level. Moreover, the computerized loom monitoring system which was developed under contract by the China Computer Technical Services Company and the Shanghai Textile Research Institute carries on running monitoring of the cloth length on each loom, the number of machine stoppages and the reasons and times, then computes 65 indices, including output, efficiency and rotary speed, and continually prints them out or displays them, furnishing the operator with timely, correct data so that timely measures can be taken to solve the key problems of low-efficiency, problem-ridden textile technology, resulting in increased output and efficiency.

There have been some significant achievements in providing training services to users. According to preliminary statistics on 9 units, including the China Computer Technical Services Company, the Beijing Computer Industry Company, the Shanghai Computer Plant and the Beijing Radio Plant, in 1981 a total of 73 user technical training courses were held, training a total of about 6,000 persons for about 1,000 user organizations nationwide. These units also are continuously improving management and have stepped up their technical services; during the year, they sent 1,143 personnel to visit more than 500 users and help them maintain their machines.

2. Energetic work on product quality and provision of full system configurations, considerable progress in new products. In 1981, all of the major R&D and production units carried out comprehensive quality management and conducted a movement to upgrade products and achieve top quality. Many units set up TQC [total quality control] offices. According to incomplete statistics, 29 enterprises established 331 TQC groups, which made an active contribution to improving product quality and the scientific management standards. In 1981 the RDG-8 optoelectronic device produced by the Yantai Radio Plant No 6 in Shandong once again won a state silver medal, as did the CT902C precision digital magnetic head produced by the Mudanjiang Magnetic Head Plant in Heilongjiang.

The DJS 153 minicomputer mainframe developed in 1981 had a mean time to failure of over 2,400 hours, close to the levels achieved by similar products abroad. The MTTF of the DJS 130 mainframe was increased from the 1980 nationwide quality criterion figure of 500 hours to more than 1,000 hours. The DJS 210 medium-size computer also achieved an MTTF of 600 hours. The quality of other computers and peripheral devices also improved.

There was considerable progress in experimental production of new products. During 1981, the China computer industry system developed the DJS 130B, 132, 140 and 153 and DJS 184, 185 and 186 minicomputers, the HDS-801 medium-size computer, the DJS 052, 054 and 062 microcomputers and some single-board computers, an industrial control computer, the DJM 310 analog computer, and magnetic disk stores with capacities of 6, 14.5, 29 and 50 megabyte floppy disk stores, display terminals, printers, devices operating with Chinese characters, precision plotters and other peripherals. According to preliminary statistics, 11 mainframes and 5 peripheral devices passed technical evaluations. During the year there were new improvements in the manufacturing processes, structure and external design of domestically produced computer systems.

Following a long period of discussion and documentation, in 1981 the development of new large- and medium-size series computers got underway.

3. Computer products trade exhibitions further expanded the link between production and demand. From 1 September to 15 October 1981, the China computer industry system held a large computer products trade exhibition at the Beijing Exhibition Hall. Nearly 100 development and production units displayed more than 200 computers, peripheral devices and accessories, with a focus on computer applications systems, as well as recently developed new products and devices operating with Chinese characters. This exhibition attracted much interest both here and abroad, and there were active technical interchange and professional discussion. According to preliminary statistics, about 80,000 experts, scientific and technical personnel, management cadres, workers, PLA members and instructors and students of major advanced academies and schools visited the exhibition. Over 200 experts and factory representatives from 20 countries including the United States, Japan, England, France and also visited the exhibition and conducted talks. In addition, the exhibition included 22 special exhibit areas and 42 special-topic technical interchanges, technical seminars and report meetings attended by more than 6,000 persons from more than 600 units. Total transactions for computers, peripherals and accessories concluded during the exhibition amounted to more than 18 million yuan.

The Chinese-produced computers have made a deep impression on Chinese and foreign observers in recent years. Foreign friends and company representatives all stated that the Chinese products they had seen were more numerous and better than they had expected and concluded that the Chinese-produced character-processing technology, laser phototypesetting systems and certain computer applications items were already at a respectable level. A high-ranking engineer with the United States IEEE [Institute of Electrical and Electronics Engineers] delegation stated: "My overall impression is that you are paying considerable attention to applications, which will help to increase China's efficiency." A high-ranking official of a United States computer company who had visited the 1980 exhibition was impressed, and said: "Last year's exhibition was like a 3-year-old child, while this year's is already like a 17- or 18-year old." Certain foreigners and Hong Kong businessmen expressed interest in China's character-processing equipment, display terminals, precision flat-plate plotters, magnetic disks, magnetic heads and microprocessor chips and held many talks with us; some also indicated a desire to cooperate with China in such areas as automated electrocardiogram diagnosis and production of color viodeotape.

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## CHINA'S AIRCRAFT INDUSTRY

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[Article by Survey and Research Office, Third Ministry of the Machine Building Industry]

[Text] Brief Historical Survey

Before New China was founded, China had no aircraft industry of its own and had never produced a Chinese-designed aircraft using only Chinese materials. After the founding of New China, the aircraft industry came into being and expanded, proceeding from repair to production, from imitation to independent design, and gradually grew into a powerful integrated department of the machine-building industry, making the requisite contribution to strengthening national defense and developing the national economy.

A Powerful Backup for the People's Air Force.

New China's aircraft industry has gradually developed in response to the development of the PLA Air Force.

In June 1950, the United States imperialists brazenly unleashed an aggressive war against North Korea and pressed forward to the banks of the Yalu River, gravely threatening China's security. In order to protect the new socialist nation, following the entry of ground force units of the Chinese People's Volunteer Army into the war, our youthful volunteer air force also went to war in Korea. Because capabilities of the small aircraft repair plants that had been organized by the Air Force were limited, they were quite incapable of meeting the needs of warfare and Air Force development. In April 1951, the party Central Committee formally decided to establish our country's own aircraft industry and set up an aviation industry management committee to directly guide its development.

Starting in 1953, the aircraft industry entered a period of large-scale construction. Even though at that time our country had a multiplicity of pressing tasks, the party and government still accorded a key position to the aircraft industry, not only allocating considerable funds and precision equipment to it, but in addition transferring large numbers of outstanding leadership

cadres, scientific and technical personnel and technicians from all over the country to it. After more than a year's effort, in August 1954 New China trial-produced its first aircraft, ending the period of the Chinese people's inability to produce aircraft independently. The employees of the aircraft industry, with the energetic support of the entire country, made unremitting efforts and began the advance into jet technology. In August 1956, the first domestically produced jet aircraft rose into the skies of the fatherland, and China became one of the few countries to have mastered jet technology. By the end of 1957, the aircraft industry had established its key plants and had essentially mastered the techniques of producing piston-engine and jet aircraft. This indicated that in only about 3 years, China had made the transition from aircraft repair to aircraft manufacture and had entered a new age in which it could organize regular production.

The aircraft industry is a department based on science and technology, and scientific research is of particular importance to it. As production progressed, China's aircraft industry's development research and product research also gradually moved forward. In 1956, some plants began to establish product research laboratories and experimental laboratories. In the late 1950's some design research organizations and aviation schools developed a variety of new aircraft, which were built and flown. Although the performance characteristics of these aircraft were not advanced, they were an encouraging start. Thereafter, these design research organizations gradually developed into independent aviation research institutes and product research institutes, in addition to which aviation research academies were organized and some applied research work was begun. For many years, the aircraft industry achieved large numbers of scientific research successes and independently developed ground attack fighters, high-altitude, high-speed fighters, helicopters, trainers, transports and the like; the proportion of modern aircraft has increased steadily. At the same time, considerable progress was made in aviation education. In addition to plant-run college and intermediate level specialized schools and technical schools, we now have three key advanced schools, namely the Beijing Aviation Academy, the Northwestern Industrial College and the Nanjing Aviation Academy, and the three ordinary schools, the Shenyang Aviation Industry Academy, the Nanchang Aircraft Industry Academy, and the Zhengzhou Aircraft Industry Training School, all of which have a total of more than 10,000 students. They have dispatched large numbers of trained scientific and management personnel to the aircraft industry.

As a result of more than 30 years of development, a relatively complete industry has begun to take shape in China, including an aircraft industry system with production, research and education units, which has mass produced a variety of aircraft and equipped the army and navy. Many years' experience makes it clear that the Chinese-produced aircraft have excellent capabilities and reliability; they have made a worthy contribution to the struggle to strengthen our combat readiness and protect the fatherland. Statistics for the last 5 years for the relevant departments indicate that the flying safety record of PLA aviation is among the best in the world, an achievement which is inseparable from aircraft design and production quality and reliability. In August-September 1981, the PLA carried out large-scale military maneuvers in the

north China region; Air Force units took on the tasks of establishing air superiority, air reconnaissance, aerial fire support, aerial supply and rescue, parachute drops and airmobile landings to seize key points, aerial minelaying, electronic countermeasures and the like. The number of personnel and aircraft involved in the exercises and the scale and complexity of the coordinated combat assignments were unprecedented since the birth of the Air Force. All squadrons created a deep impression by their timely arrival, accurate firing, bombing and landing of troops, excellent coordination and excellent safety record. This was not only a comprehensive review of the combat capabilities of the Air Force, but also a comprehensive test of the aircraft industry.

#### An Effective Force in Building the National Economy.

Today, aircraft are essential tools of transport and communications, and important technical facilities for scientific research, resource surveying, agricultural spraying, fertilizer application, afforestation, fisheries, rainmaking, petroleum exploration, medical and rescue services, physical culture and the like.

At the end of the First 5-Year-Plan, in response to the party Central Committee's directive regarding coordination between the army and people and in peacetime and war time, our aircraft industry trial-produced the Y-5, a light, easy-to-maneuver multipurpose transport. In the 1960's we also batch-produced the Z-5, a multipurpose helicopter. In the 1970's we developed a small agricultural aircraft, the Y-11. We have already produced five varieties of civilian aircraft, which are finding increasing use in the development of the national economy. For example, the use of aircraft for spraying insecticides and herbicides, seeding and the like has the advantages of high efficiency, good quality, low cost and excellent results. According to statistics, when the Y-5 and Y-11 aircraft are used for superlow-capacity spraying of agricultural pesticides to control disease, and insect pests, they can treat several hundred mu of farmland in a minute, and more than 10,000 mu can be treated per flight; the insect killing effectiveness may be 90 percent or more. When used to apply top-dress fertilizer to rice paddies, a Y-5 aircraft can do in 5 hours what would take over 400 able workers a day to complete. In direct broadcast seeding of rice, in a single flight it is possible to do work which would require more than 1,000 work-days, and the germination rate is 20 percent or more higher than other methods of direct broadcast seeding, which helps increase output and earnings. Starting in 1958, China began to use the Y-5 and other aircraft for direct afforestation work. In one flying day, a single aircraft can seed a minimum of 30,000 mu and a maximum of 70,000 mu; the aerial work costs only 0.2-0.3 yuan per mu, much less than direct seeding by hand. By 1980, 180 million mu of land had been afforested in 79 prefectures and 590 counties in 22 provinces, municipalities and autonomous regions, and large-area forest growth or likely forest growth totaled 70 million mu: 47 million mu is already flourishing forest, and 22 million mu has begun to develop into forest, a success rate of nearly 40 percent. These are excellent results.

Our country is vast and populous, and the aircraft industry has vast prospects for serving the development of the national economy. Aviation gas turbines

are 70 percent lighter than industrial gas turbines, with about 40 percent less volume, and their thermal efficiency is 6 to 10 percent higher. Since the 1960's they have gradually become a new source of motive power and have come into wide use for power generation and petroleum extraction and for use in ships, high-speed locomotives, tanks and large-scale research installations. Starting in 1975, with the energetic cooperation of sister departments, China's aircraft industry began research on land and sea uses of aviation gas turbines. We have already test-produced three models. Use at the Karamay, Dongpu and Renqiu oil fields has shown that their use on the ground requires a small investment and gives rapid results, while they are easy to start, highly reliable, and can burn not only heavy oil but many types of liquid hydrocarbon and gas fuels, in particular natural gas. The thermal efficiency of some of the models is already close to advanced international standards for engines of the same power rating.

Currently, China's economy is in the process of a profound change from primarily extensive development to primarily intensive development, and all departments in the national economy face extremely complex technical modernization tasks. For some years, while meeting strategic needs, the aircraft industry has not only focused on developing civil aviation and industrial gas turbines, but also has used its own technical and equipment advantages to develop and produce a large number of rather advanced types of machinery for light industry, textiles, foodstuffs, and other industries. A great deal of Air Force technology has been made available for civilian use, providing strength to raise China's scientific and technical level. Liquid nitrogen flasks, hydrogen purification equipment, microcollimation telescopes, model 3B transport parachutes and the like have been awarded state silver medals for quality. In addition, the aircraft industry has produced motorcycles, bicycles, clocks, air conditioners, electric fans, tape recorders, washing machines and other durable consumer goods.

#### Expanding the Future Base for Export.

Because the aircraft industry has a powerful scientific and technical base and large amounts of advanced precision equipment, many industrially advanced countries use it as an important department for expanding exports and have set up an export-oriented product structure. In the past, other than a few products which supported certain Third World countries, most of China's aviation products only met domestic needs. Following the 3d Plenary Session of the 11th Central Committee, the aircraft industry conscientiously implemented the four-point policy of readjustment, reform, reorganization and upgrading, not only readjusting the military and civilian product structure, but assigning a high priority to expanding exports. In 1979 the state authorized the aircraft industry to set up the China Aviation Technology Import-Export Corporation, which independently dealt in aviation products and other electrical and mechanical products with foreign countries, uniting industry with trade and technology with trade. That autumn, the corporation participated for the first time in the Canton Trade Fair, exhibiting civilian aircraft, motorcycles, precision equipment, precision tools and other special machine-building products and

daily-use consumer goods. The reliable quality and fine workmanship of these products attracted many foreign businessmen, and they were praised as "something new and significant" at that session of the trade fair.

As a result of several years' effort, the aircraft industry's import-export work has progressed considerably. Currently the China Aviation Technology Import-Export Corporation has established branches or offices in Guangzhou, Fuzhou, Shanghai, Shenzhen and Xiamen and has set up agencies or liaison groups in such places as London, Paris and Marseille. It has established trade relations with hundreds of foreign businessmen in several dozen countries and areas, the amount of export business it transacts is steadily growing, and the scope of its operations is steadily expanding.

#### New Progress in 1981

In 1981 the aircraft industry further readjusted itself and progressed while overcoming difficulties.

In accordance with the general policy of carrying out further economic readjustment and achieving further political stability which was issued by the party's Central Committee, the aircraft industry acted in terms of its own actual conditions and undertook further readjustment with reference to its capabilities, achieving some success. Acting with reference to capabilities meant that the capital construction front would have to be contracted, scientific research would be accorded a high priority, import projects would have to be decreased, and the aircraft industry's development work would have to be truly based on national capabilities. To achieve some success it was necessary to shorten the industry's front lines, emphasize key areas, assure the furnishing of military products, develop scientific research, expand civilian products, expand export and make a greater contribution to the country.

In the second half-year, in accordance with the Central Committee's requests, the aircraft industry pursued enterprise consolidation and energetically strengthened all of its capital construction; in addition, it implemented the spirit of the national forum on problems on the ideological front, held a political work conference, and stressed that there is a need to show a militant spirit and overcome laxity and weakness in ideological leadership, and that while making an effort to developing material culture, we must also strive to develop spiritual culture. Thus, the industry further promoted work in all areas, achieved new progress in scientific research, education, production and construction, and consolidated and developed the political situation of stability and unity.

Stress on key areas of scientific research made new progress in 1981, which was a year of progress in scientific research and steadily advancing in readjustment. All scientific and technical personnel adhered to the policy of "putting scientific research first" and worked hard, with the result that they completed 547 scientific research projects during the year, of which 148 received prizes for scientific achievement from the Third Ministry of Machine Building. There was also progress in the development of new products.



The number of preliminary research projects was decreased by 23 percent, key areas were stressed, and unnecessary duplication was reduced. A beginning was made in achieving a clear understanding of each research topic in terms of objectives, scope, technical approach, stage-by-stage implementation plans, and ways of relating it to the development of new products, and command channels were established and made effective. A total of 74 results and phased results were achieved during the year in accordance with advance planning. Some major technical breakthroughs were made in certain topics, providing a technical reserve for developing new aircraft.

There were also achievements in improving scientific research and improving test equipment. For example, as a result of improvement of wind tunnel experimental apparatus, automated real-time processing of data has been instituted, blower efficiency and airflow precision have been increased, and an advanced level has been achieved by domestic standards. A constant-temperature airflow meter, a micromoment measuring device and a polar-axis roll testing device filled gaps in domestic measurement and testing instrumentation and created excellent conditions for improving measurement and testing techniques in aircraft development and production.

Some new ways were found in scientific research management. In order to improve funds utilization efficiency, all research units instituted research topic accounting, and the technical and economic contract system was implemented experimentally in some projects; systems engineering and the program evaluation and review technique [PERT] were adopted and the topic analysis approach was used for quality control, resulting in good technical and economic results.

In 1981 there were rather active academic exchanges of experiences in scientific management. In July the China Aviation Society held its first scientific management exchange conference, a conference of representatives of 65 units of the relevant departments, academies, plants, institutes, the Air Force and civil aviation units. Some 90 papers and reports were distributed. In addition, the Third Ministry of Machine Building's technical exchange station held a science and technology management exchange meeting. Academic activity in the management of aviation science was welcomed and highly praised by the relevant parties.

Conscientious Readjustment of the Production Structure, Increased Output of Civilian Products.

In the past, our aviation industry was structured almost exclusively for the production of military products. Since the 3d Plenary Session of the 11th Central Committee, in keeping with the policy of uniting military and civilian production, the aircraft industry expanded the range of sectors it served and began a readjustment of its production structure; while assuring that needs in combat readiness would be met and serving national defense modernization, it strove to serve the technical modernization of the national economy, livelihood of the masses, and the expansion of export. For several years the output of civilian products has been increasing in value terms: in 1981 it

was up by 1.5 times from 1979. In addition, its share of total output value increased from 16.8 percent to 25.6 percent. Currently the aircraft industry is producing 1,500 varieties of civilian products and has constructed several production lines for them. The main progress in 1981 was as follows.

1. In the civilian aircraft area, the Y-10, large, long-range passenger aircraft developed and produced in China, successfully flew from Shanghai to Beijing on its first long-range flight test. The Y-11, small, maneuverable Chinese-developed aircraft has good low-altitude capabilities and a wide range of uses. In 1981, in addition to direct forest seeding, insect spraying, application of fertilizer and the like in the northeast, north China and elsewhere, surveys of wild animal resources and geological mineral prospecting were conducted. For example, in the Mudanjiang area a rare water bird, the red-crowned crane, was surveyed, the population and distribution of the red-crowned crane, the white-crowned crane, the white crane, the white-crowned crane (?) [4101 0385] and other rare birds, were determined, and valuable photographs were taken. With energetic cooperation from sister units, the flight quality needs of geological ore prospecting, were met effectively, the flying quality of past aerial physical surveys, was surpassed, and useful data were provided for geological mapping and mineral prospecting, winning high praise from the relevant departments.

2. In land and shipboard use of aircraft engines, under the centralized leadership of the State Machine-Building Industry Commission, an industrial gas turbine planning and readjustment coordination group, including the relevant military and civilian departments and units was formed. By dint of extensive research, it developed a preliminary development plan, coordinated and unified the measures in the relevant departments, and carried out necessary work.

3. In production of durable consumer goods, on the basis of state requirements and market needs, in 1981 the aircraft enterprises devoted attention to selection of product models, increased series production, decreased production costs and expanded sales, and many products became popular goods on the market. A total of 4,884 air conditioners, 142,403 clocks, 80,345 washing machines, 7,200 bicycles, 13,826 motorcycles, 101,099 electric fans, 401,433 electric meters, 5,608 model boat engines and a large number of other products welcomed by the masses were produced.

4. In technical modernization for the national economy, as a result of surveys and research the aircraft industry is constantly expanding the range of sectors it serves, having already begun to serve more than 20 sectors. For example, the parts for chemical fiber equipment which it is providing to the chemical industry not only have met the urgent production needs of this sister department, but also have saved foreign exchange for the country. The automated bread production line which it provided to the food industry was a first in this country, which requires only 13 men to operate and can produce bread from 7.5 tons of bread flour, with a total annual output value of more than 500,000 yuan. Similar products include a cigarette rolling machine, a filter inserting machine, a sizing machine, a bake oven, a zhidianji [0455 0368 2894;

Pattern-making machine?], a liquid nitrogen flask, a hydrogen purifying unit, a wastewater treatment unit and the like. The development of these products, not only caused the aircraft industry to master nonaviation products, use relatively mature new military-related technologies, processes and materials for civilian products and carry out the transfer of military technologies to the civilian sector, but in addition it resulted in expanded productive capacities and increased economic results.

In civilian production, the aircraft industry gives particular attention to making use of its advantages in equipment and facilities to increase product quality. In 1981 the Sanye brand HM-10RW model boat engine and the Yuhang marble slab won state silver medals for quality. In June 1981, at the national model boat competition at Hangzhou, teams representing Zhejiang, Shanghai and other provinces and cities used the HM-10RW model boat engine in a 500-meter circuit race and won the first six places; five operators set or broke world records. Similar products include a sport parachute, the Changjiang 750 motorcycle and the like. In addition, the aircraft industry has produced a large number of high-quality precision devices, such as a servoturntable with three degrees of freedom, a thread cutting machine, a dynamic balancing machine, a meter-calibrating machine, a high-speed dental drill and the like; some of these products filled gaps in this country, and some were urgently needed for production in various departments.

#### Efforts To Open Up International Markets, Considerable Expansion of Foreign Trade and Export.

In order to consolidate and develop the successes achieved in the previous 2 years, in 1981 the aircraft industry consistently carried out the foreign trade and export policies of expanding the number of countries traded with, expanding the variety of export goods, and expanding the range of operations, achieving significant results. The total number of export transactions for the year was 2.1 times greater than the plan quota and was up 38 percent from 1980; 1.6 times the plan target for foreign exchange was realized, nearly twice the total for the previous 2 years. The main characteristics were as follows:

We are trading with an increasing number of foreign companies. In 1981 the China Aviation Technology Import-Export Corporation energetically improved its operating style. It changed over from "sitting" salesmen to traveling salesmen and invited foreign businessmen to visit China for talks, as well as sending personnel abroad to publicize products and contact customers. Representatives of more than 300 companies visited China. During the year we sent out 15 trade investigation and exhibition groups, which went to the United States, England, West Germany, Japan, Italy, Sweden, Portugal, Argentina, Thailand and Hong Kong to publicize products and carry on trade activities, which expanded our influence. At the same time, the corporation not only actively participated in the semiannual Guangzhou Trade Fair, but in addition held its own exhibitions of aviation castings and forgings and the like, giving foreign businessmen a further understanding of the technical standards and productive capabilities of China's aircraft industry, thus strengthening ties, so that more and more businessmen are starting to come to us to do business.

We have developed a group of fast-selling products. As a result of several years' work, the aircraft industry has developed a preliminary set of relatively large-output items with a good reputation on foreign markets. They include aircraft tools and measuring tools, forged and cast parts and the like. In 1981, the calipers, meters, height meters, granite slabs, bench vises, magnetic tables, T-squares and the like had begun to find customers on foreign markets, accounting for 40 percent of transactions for export of civilian products, and some sold so fast that supply could not keep up with demand. In order to make continuing progress with these fast-selling items, in connection with the readjustment and reorganization of all industrial branches, the aircraft industry has begun to make investigations and to establish an export products base. The China Aviation Technology Import-Export Corporation Industry and Trade Center in the Shenzhen Special Economic Zone has been established and an aluminum products machining plant has already gone into production, while the contracts have already been signed for the building of the Shenzhen Precision Aircraft Tool and Pattern Plant and the Shenzhen Aviation Chronometer Plant with foreign capital, and construction plans are under way.

Business is becoming increasingly vigorous. In 1981, the aircraft industry strove to export industrial finished products, while at the same time it contracted for construction work and the like. Particularly worthy of mention is the processing of imported materials according to imported blueprints and imported models (the so-called "three imports"). Because our aircraft industry has cheap labor and a certain level of technical standards, it has the ability to attract processing work from abroad. Contracting for this type of work not only can make use of our aircraft industry's technical manpower and facilities, so that production capabilities are fully utilized and more foreign exchange is earned for the country, but in addition enables us to learn advanced foreign technologies and management methods and thereby improve our technical and management standards. It can strengthen our relationships with international markets, expand the scope of the aviation industry's cooperation abroad, increase our reputation, and create the conditions for further joint development and production of aircraft products with foreign countries. In the last year the China Aviation Technology Import-Export Corporation has had many contacts with foreign companies regarding processing of the "three imports" and has signed a number of contracts.

We have further improved our foreign trade system. In order to fully mobilize the enthusiasm of all units and all employees for increased export and earning of foreign exchange, during the second half of 1980 the aircraft industry further reformed its foreign trade management system. One aspect of the reform was assuring that the enterprises received sufficient profit from export and the creation of foreign exchange. Provided that an enterprise fulfilled its state plan and acted within the context centralized dealings with foreign countries, it could export increased amounts of its own products and retain part of its foreign exchange earnings. The most important products are exported under centralized control by the China Aviation Technology Import-Export Corporation, but the enterprises have the right to participate in talks with foreign businessmen. For most products, the policy of "unified management, dispersed operations, contact between producer and seller, bearing

of profit or loss" is followed, so that the enterprise has increased autonomy. In the case of products with potential for development whose production is easy to disperse, such as cast and forged parts, tools and measuring tools, we have set up trade associations to investigate the business situation, to engage in cooperation and division of labor, and to guide the relevant basic-level units. In addition, we have established the relevant regulations and systems and made them effective, and have strengthened quality control and technical services for export products, which has promoted the development of foreign trade and export.

Enterprise consolidation is in progress, and the economic responsibility system is gradually being implemented. In the second half of 1981 the aircraft industry carried on enterprise consolidation work. First, it conscientiously consolidated all leadership groups at all levels. Some 273 specialized cadres in the prime of life were promoted to leadership posts at the rank of deputy chief engineers of plants or institutes or higher, and 139 older comrades retired to the second or third line. Seven older comrades in the Third Ministry of Machine Building voluntarily resigned from deputy minister's posts, setting a very good example. There has been some decrease in the average age of leadership groups from ministry level down to the basic levels, and the proportion of specialists has also increased. The plant, institute or academy director responsibility system under the leadership of the party committee, the technical responsibility system centered on the chief engineer, and the economic accounting responsibility system centered on the chief accountant have been improved. Employee councils have been held in 93 percent of enterprises, and democratic management has been strengthened. In addition, the various units have consolidated and improved their basic work to various degrees, and there has been an improvement in enterprise management.

Starting in 1980, the state instituted the profits contracting method in the aircraft industry. The aircraft industry contracted for profit norms with the individual enterprises and expanded enterprise autonomy, which began to mobilize the enterprises' enthusiasm for increasing output and earnings. In 1981 this work was further consolidated and improved. Most enterprises began trial implementation of various forms of economic responsibility systems, implemented the principle of distribution according to work, and improved their bonus methods. Through the efforts of all employees, the industry fulfilled 115 percent of the total output value quota and realized profits equal to 111 percent of the plan target; the plan was fulfilled in conservation of coal, electricity and oil, and the economic condition of the entire aircraft industry was better than expected.

More extensive attention has been paid to the training and education of all personnel and new results have been achieved. One of the basic tasks in developing the aircraft industry is an energetic effort to establish a contingent of employees with socialist consciousness and a mastery of modern science and technology and modern economic management. In accordance with the "Decision on Strengthening Worker Education" issued by the Central Committee and State Council, in 1981 the aircraft industry made a major effort in training all personnel and strengthened its organizational leadership. Many units

conscientiously summarized the experience of the first few years of technical training and strove to develop their training programs regularly and systematically. The number of personnel who underwent all-year-round training or training in rotation was more than a third to the total number of employees, overfulfilling the original plan. The main approaches to training of all personnel were as follows.

Plant or institute level leadership cadres were trained by the Beijing Aviation Academy, the Northwestern Industrial College and the Zhengzhou Aviation Industry Training School. There were three main forms. (1) Group-by-group rotation training of the leadership cadres for 2 to 3 months while on leave from production. In this form, a total of 452 leadership cadres and 328 specialist leadership cadres were trained in rotation. (2) The Beijing Aviation Academy held special courses for plant and institute leadership cadres with senior high school or intermediate specialized education, reserve cadres and some key middle-level leadership cadres aged 45 and under. After 2 years' intense work they reached the college-graduate level. In 1981, 50 students were accepted by examination. (3) The Zhengzhou Aviation Industry Training School held 1-year training courses to train plant and institute leadership cadres aged 50 or under with a primary or intermediate education. In 1981 it accepted the first group of 50 trainees.

Workshop and laboratory level leadership cadres and management personnel and scientific and technical personnel were trained by the various units and specialties. The training period generally is 3 months in rotation, and the primary aim is to improve specialist knowledge and increase job capabilities. It is expected that a rotational training program can be completed in 3 years.

In technical training of workers, the main effort was made in remedial cultural and technical classes for people 35 years of age or under. (1) Vocational schools at all levels adhered to the principle of "combining the training of external students and regular students, with the focus on regular students," and concentrated on a 2-year training course for apprentices and young people who had entered the plants by various routes in the last few years and had not undergone systematic technical training. Those who were not able to enter the vocational schools were sent group by group to plant technical training classes for 6 months to a year of rotational training while on leave from production. (2) All cadres and workers without an elementary or secondary education were first organized for remedial elementary or middle schooling by means of remedial-cultural classes, plant-run spare-time and night schools and the like, so that they achieved an elementary or intermediate education by a specified time. (3) An extensive variety of types of job training, technical demonstrations and other activities was organized, so that within a certain time all classes of workers achieved the requisite knowledge and capabilities for their jobs.

In order to implement personnel training tasks effectively, all units have designated personnel and organizations to be in charge of the work and have drafted preliminary plans for it. A strict evaluation system has been established for all training personnel. Those who distinguish themselves in training work can receive early transfer to regular status or early promotion, so that the work of training all personnel will be carried out effectively and thoroughly.

## Development Prospects

As a result of more than 30 years' construction, the Chinese aircraft industry has developed considerably. This fact has repeatedly and eloquently demonstrated the great superiority of the socialist system and has reflected the intelligence and ability of our people. But as a result of a variety of complex factors, our aircraft industry is still well behind advanced world standards in many respects and is still far from being able to adapt to the needs of national defense development and construction of the national economy. The basic approach to speeding up the development of the aircraft industry is conscientious implementation of the eight-character guiding principle, using readjustment, restructuring, reorganization and upgrading to gradually establish a rational production, technical, and organizational structure and management system, and a new road of more rapid technical development and greater economic benefits. All employees of the aircraft industry, under the guidance of the party Central Committee, are showing a revolutionary spirit and closing ranks to make a concerted effort to implement the 10 guidelines for development of the national economy announced by Premier Zhao Ziyang at the Fourth Session of the Fifth National People's Congress, to further revise the general plan for the Sixth 5-Year-Plan period, and to truly implement the tasks of readjustment, restructuring, and reorganization and progress in solid fashion. We are confident that after a period of effort, our aviation industry will be able to narrow the gap between it and the world's advanced standards and to make a greater contribution to the four modernizations.

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## SURVEY OF CIVILIAN GOODS PRODUCED BY CHINA'S ORDNANCE INDUSTRY

Beijing ZHONGGUO JINGJI NIANJIAN (1982) [ALMANAC OF CHINA'S ECONOMY (1982)] in Chinese 1982 pp V 181-V 183

[Article by Wu Yanshi [2976 6056 1395]]

### [Text] I. Historical Survey

China had armaments very early and developed them rapidly. According to historical records, we had cannons during the Jiading reign period of the Song Dynasty (1215 AD), and gunpowder was used in weapons before that time. But we established a regular armaments industry only in the mid-19th century, in the late Qing Dynasty, which was the time when China's new industries began.

The creation of the people's armaments industry dates from the first civil war. Following the Nanchang 1 August uprising in 1927, as the revolutionary situation and the armed struggle developed, all of the revolutionary base areas, from the Hunan-Hubei-Jiangxi and Hubei-Henan-Anhui areas to northern Fujian, western Fujian and from Hainan Island to northern Shaanxi, all established weapons repair shops or groups, which were the first beginnings of the people's weapons industry. In October 1931, the Central Soviet Armaments Factory was established in the town of Guantian, Xingguo County, Jiangxi Province, starting a new chapter in the history of China's armaments industry.

After the state was founded, the party and state immediately established the Armaments Committee of the Military Commission, with Comrade Zhou Enlai as chairman and Comrades Nie Rongzhen and Li Fuchun as vice chairmen, to directly guide the construction of the armaments industry. In the past 33 years, the armaments industry has developed greatly, producing not only large quantities of military products, but large amounts of civilian products as well, so that it has made an active contribution to strengthening national defense and developing the national economy.

In 1952 the Armaments Committee of the Central Military Commission decided that the armaments industry should follow the principle of "combining military and civilian production." On the basis of this decision, during the First and Second 5-Year Plan periods the armaments industry had its enterprises draft production plans for secondary (i.e. civilian) products; once they had completed their military production tasks, they energetically expanded the



production of civilian products. By 1960, civilian products output value already accounted for three-fourths of total output value, and many achievements had been posted. In the early 1960's, because of an erroneous guiding ideology, the production of civilian products was severely curtailed, and the armaments industry returned to the old road of producing only military products, a situation which lasted for more than 10 years. It was only after the smashing of the "gang of four" that there was a fundamental change in the situation.

In 1978 the party Central Committee and the State Council announced the policy of "combining military and civilian production, combining peacetime and military activities, giving priority to military production and using civilian products to support the army." On the basis of this policy, the armaments industry again organized production of civilian products. In addition to civilian-use blasting equipment and materials and nonstandard equipment for foreign aid, which accounted for a large proportion of the civilian products produced at the time, the main new civilian products included such producer goods as mining machinery, construction machinery and petroleum machinery, while consumer goods accounted for a very small proportion. As the national economy was readjusted, the demand for producer goods decreased sharply. A situation in which contracts were being scrapped, products were overstocked and there was a shortage of capital funds in civilian goods production.

In 1979 the party Central Committee stated that the armaments industry should "do everything possible to produce cheap, attractive civilian products urgently needed by the market, particularly durable daily-use consumer goods." In the spirit of this directive, the armaments industry immediately readjusted its civilian products structure, energetically increased its output of durables, and started to shift its orientation away from producing chiefly producer goods toward equal emphasis on producer and consumer goods, while giving consumer goods top priority in the near term.

Since the 3d Plenary Session of the 11th Party Central Committee, the armaments industry's civilian goods production has achieved marked successes.

First, the output value of civilian products has steadily increased, as has their proportion of total output value. In 1980 civilian goods output value was up 32 percent over 1979, while in 1981 it was up an additional 19 percent over 1980. The share of civilian goods in total output value was 10 percent higher in 1980 than in 1979 and 5 percent higher in 1981 than in 1980.

Second, there were changes in the civilian product structure, with a rather rapid increase in output of consumer goods. The output value of consumer goods was 12 times higher in 1980 than in 1979 and 3 times higher in 1981 than in 1980, thus making a positive contribution to market prosperity and the satisfaction of the people's daily needs.

Third, construction was stepped up on the production front, and series-production capabilities were developed for many products. In recent years, nearly 200 production lines for products, parts and components have been rebuilt or expanded, so that many durable goods urgently needed by the people have gone from small-series trial production to large-series production.

Fourth, there was a rather rapid increase in export of civilian products. Eighteen mainstay products, including diesel engines, hunting rifles, oil well casing pipe, activated charcoal and clocks entered the international market. The amount of foreign exchange created in 1980 was three times greater than in 1979, and the 1981 amount was more than double the 1980 amount.

## II. Armaments Industry Civilian Production Enters a New Stage in 1981

The main features of the new stage into which the armaments industry's civilian production entered in 1981 are as follows:

First, many localities and enterprises had their own fast-selling products. Local military industry enterprises and more than half of ministry-subordinate enterprises in 19 provinces, municipalities and autonomous regions, including Shandong, Jiangxi, Anhui, Shaanxi, Fujian, Hunan, Hubei, Shanxi, Yunnan and Xinjiang, had at least two fast-selling products. Many production locations for key daily-use electrical and mechanical products covered by unified state programs, i.e. bicycles, sewing machines, clocks, wristwatches, washing machines, cameras and electric fans, took shape. The annual production capacities for such products were: 1 million bicycles, 1 million sewing machines, 1 million clocks, 2 million wristwatches, 80,000 washing machines, 150,000 cameras, and 700,000 fans. In addition, series production capabilities for dozens of products such as liquefied natural gas cylinders, carboxymethyl cellulose, petroleum drilling bits, tires, castings and forgings, telescopes, microscopes, bicycle gear shifts, and firefighting equipment went into operation, along with facilities to produce parts and assemblies for bicycles, motorcycles, sewing machines, clocks, household electric meters and cameras. When production of civilian products began to be increased, the unavoidable problems of too wide a range of models to choose from and inadequate product competitive capabilities were gradually overcome as the initial stage of a multitude of minor problems, such as "waging petty quarrels" and "looking for rice to be cooked in the pot," was left and a new stage of planned guidance and a full complement of facilities was entered.

Second, new achievements were made in developing new products and improving older ones. Many enterprises devoted great attention to developing civilian products and established special research organizations for the purpose. The products that have been developed include a steel-framed yurt, an aluminum-alloy bicycle, a trepanning drill, a liquid nitrogen flask, a seismic prospecting charge, a miner's emergency filter, and color-changing eyeglass lenses. Many enterprises have strengthened civilian products quality management, and product quality has improved steadily. In 1981, the high-speed bullets for sports rifles produced by the Beijing Tool Plant, the industrial fuse produced by the Shandong Chemical Engineering Plant, and the nitrocellulose produced by the Luzhou Chemical Engineering Plant won state gold or silver medals for superior quality; 26 products, including the household electric meters produced by the Jiangbei Electrical Machinery Plant and the movie projectors produced by the Hongguang Instruments Plant, won ministry designations as superior products. By 1981 a total of 46 civilian products of the armaments industry had won gold or silver medals or ministry awards.

Third, the chemical engineering enterprises, for which increasing the output of civilian products was particularly difficult, found new avenues. By means of domestic and foreign market surveys and scientific documentation, they found some promising products. The armaments industry is preparing, along with Shandong Province and the Ministry of Coal Industry, to build an experimental shop to produce methyl alcohol from coal at the Jinan Chemical Plant in order to use the rich coal resources in that location as a starting material for the production of methanol to help make up for China's shortage of energy resources. The Qingyang Chemical Plant will produce toluyl diisocyanate (TDI), a starting material for foamed plastic, in order to provide the market with a large variety of foamed plastic products. The Xiangdong Chemical Plant will use a new flotation process to produce plate glass, which is in short supply on the market. In addition, the armaments industry is preparing to organize the production of bamboo board, aged quzhou wine, beer, wool textiles, and cotton pulp sheet, a starting material for viscose fiber. These products offer excellent prospects for expanding the output of civilian products.

### III. Further Development During the Course of Readjustment

#### A. Persistence in the Policy of Equal Emphasis on the Two Categories, and the Four Types of Service.

In keeping with the 10 guidelines for developing the national economy put forward by Premier Zhao Ziyang and the armaments industry's positive and negative experience in producing civilian products, the industry has designated adherence to the "equal stress on the two categories" and "effective performance of the four services" as its policy for civilian production.

"Equal stress on the two categories" means that civilian production must include production of both consumer and producer goods, with the short-term emphasis on consumer goods. Experience shows that concentrating exclusively on consumer goods or producer goods is one-sided, and only by combining the two is it possible to make civilian goods production adapt to market changes and meet the requirements of the national economy and the people's livelihood. Previously, an attempt was made to focus on the production of consumer goods in order to help carry the state's burden and meet the people's needs for consumer goods. From the long-term viewpoint, we must also engage in successful producer goods manufacture. As the readjustment of the national economy progresses and deepens, all of its departments will have a considerable increase in demand for various producer goods, particularly the energy, communications and building materials departments, which have shortages. Accordingly the armaments industry must make thorough use of its technical advantages to actively provide durable, superior-quality, technically advanced production equipment in accordance with the needs of its sister departments.

"The four services" means that for production of civilian goods to develop vigorously, four types of services must be provided:

1. Service to domestic markets. We are a large country with a population of 1 billion, and this market has a great capacity both for product varieties

and product quantities. As the people's condition of life is gradually improved and upgraded, this market will have extensive prospects. Accordingly, the armaments industry is preparing to increase its output of such durable consumer goods as bicycles, sewing machines and clocks to satisfy the living needs of the masses, while in addition it must make use of its technical advantages and actively develop and produce some high-grade durable consumer goods of good quality and modern design.

2. Service to the energy, communications and building materials departments. These departments are resource-poor, and whether they will be able to develop rapidly is a question that depends on the entire situation. Accordingly the armaments departments must make thorough use of its advantages of a solid technical manpower and comprehensive machining capabilities to effectively produce the equipment, parts and materials needed by the coal, petroleum, electric power, railroads, communications and building materials industries and make a contribution to accelerating energy construction, alleviating the communications and transportation shortage and improving the people's living conditions.

3. Service to technical modernization of the national economy. Currently the entire national economy's technical facilities are still rather outmoded. Many industries, including the armaments industry itself, are facing the problem of modernizing existing technical equipment. The armaments industry is currently disseminating the advanced experience of the Wangjiang Machine Plant and the Dongguang Machine Plant and offering technical modernization services to light industry and textiles. In addition, all enterprises are also requested to take a broader and longer view and actively serve the technical modernization of all departments and industries, including the armaments industry itself.

4. Service to expansion of exports. The armaments industry's civilian products exports have expanded rather rapidly and there is great potential for them. The industry is preparing to investigate world prices, energetically select designs and improve product quality, as well as to take such approaches as direct import and the "four imports and one compensation" (processing in accordance with imported samples and blueprints, processing of imported materials, assembly of imported parts, and compensatory trade) and to use the departments, localities and coastal cities as channels to develop export and create foreign exchange for the state.

In order to make civilian goods production continue to progress stably in accordance with state programs and plans, in the course of 3 to 4 years the armaments industry will gradually establish production bases focused on civilian products; during this year and the next it will concentrate its efforts on creating 51 key civilian products bases for 25 products, including daily-use electrical machinery, chemicals, optics, four major categories of machinery, including bicycles, sewing machines, clocks and washing machines, cameras, carboxymethyl cellulose, butyl alcohol, methyl alcohol, paints, cellulose diacetate aniline, toluyl diisocyanate, aluminum foil, alcoholic beverages, cotton pulp sheet, glass, bamboo board, hemp textiles, cigarette rolling machines, printing presses, construction machinery, petroleum and

coal machinery, and vehicles. In addition, it must establish civilian products export bases for 30 varieties, involving 40 enterprises. By establishing these bases, the armaments industry will considerably expand its civilian products production.

Second, civilian products production must achieve the goals of "newness, quickness, quality, cheapness, and reputation."

a. Success through newness. Newness means new products, new processes, new color and designs, and new decoration. Newness is a precondition for the civilian products to capture markets: only by having what nobody else has is it possible to win customers and capture markets. Accordingly, the armaments industry is preparing to produce more scarce products and scarce high-grade goods for domestic markets, as well as short-supply sizes and specifications of products that are adequately supplied overall, so as to fill gaps and make up for shortages. In order to achieve this goal, the armaments industry is requesting its enterprises to designate specialists to be in charge of civilian products research, and those units which must also establish civilian products research organizations.

b. Success through quickness. This means rapid selection of designs, rapid trial production, rapid construction of production lines, rapid introduction into the market and rapid modernization and upgrading. If a new product is brought out slowly, "new" can change into "old." In this respect, time is markets and time is profits. Therefore the armaments industry requests that all enterprises establish a strong time orientation in the production of civilian products, overcome the "bureaucratic businessman" style, decrease intermediate links, and increase work efficiency so that civilian products take the lead through quickness.

c. Success through quality. Quality means product craftsmanship, excellent quality, and comfort, safety and attractiveness for the user. Good quality is the lifeblood of all products. Accordingly the armaments industry requests that its enterprises try to refine and improve their product quality further, and that even in the case of fast-selling products they overcome the erroneous idea that "The emperor's daughter need not worry about marriage" and that "if the radish is 'hot,' you don't wash off the mud": they must be well aware that if today's fast-selling products lose their attractiveness to the purchaser, they may become overstocked products and it will be difficult to turn the situation around. They must conscientiously draw up quality upgrading programs and choose specific militant objectives for achieving superior quality, and strive for superior quality awards and silver and gold medals. In other words, they must produce competitive products of province class, national class and world class.

d. Success through low price. This means that the price must be reasonable, low and flexible. This is the key to success of civilian products in competition. Accordingly, the armaments industry requests that all of its enterprises adhere to three principles in respect to price. First, the price must not as a rule be higher than those of similar domestic products. Second, internal cooperative prices, external cooperative prices, ex-factory prices, wholesale

prices, retail prices, large-order preferential prices, urgent-order special prices and the like must be drawn up for every product in accordance with specific circumstances. Third, timely price adjustment decisions should be made in accordance with lot size, production cost and the market situation.

e. Success through reputation. This means prestige. Reputation is the basis on which civilian products capture markets during long-term competition. In order to achieve a reputation with users, the armaments industry requires that its enterprises make an effort in four main areas: first, they must stress trustworthiness with respect to the user and assured product maintenance, exchange, recall, and purchaser education; second, they must strive to win gold and silver medals and become widely known; third, there must be a good attitude in the plant, and modesty and prudence, politeness to customers, good production conditions and enthusiastic service must be the constant rule throughout all plants; fourth, the plants must be clean and in good order.

To summarize, newness, quickness, quality, low cost and reputation must be achieved in order to increase the competitiveness of civilian products and make an active contribution to the prosperity of the socialist economy.

Third, we must establish an integrated system which combines research and development, trial production, full-scale production, marketing and services, and exercise effective management.

The armaments industry requests that all of its enterprises establish a complete system which includes research and development, trial production and full-scale production, marketing and services, so that all links in civilian goods production can develop in coordination, forming an organic whole, in order to raise management to a new level. We must disseminate the Chang'an Machinery Plant's experience in administration and continue effective goal-oriented management, quota-oriented management and the economic responsibility system; we must disseminate the Jiancheng Machinery Plants experience in management and study and master such scientific management techniques as forecasting, decision-making and value engineering; marketing requires a unified cognizant unit and strengthened market research in order to truly raise management to a still higher level.

To summarize, the armaments industry system is resolved to make an active contribution to the prosperity of the socialist economy and to satisfying the needs of the people's livelihood.

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## CHINA'S CHEMICAL INDUSTRY IN 1981

Beijing ZHONGGUO JINGJI NIANJIAN (1982) [ALMANAC OF CHINA'S ECONOMY (1982)]  
in Chinese 1982 pp V 185-V 187

[Article by Policy Research Office, Ministry of Chemical Industry]

[Text] In 1981 the chemical industry front continued to implement the line and policies that have been in force since the 3d Plenary Session of the 11th Party Central Committee and conscientiously carried out the policy of further economic readjustment. Considerable progress was made in all types of work and there were new achievements.

1. Complete Fulfillment of Production Plans. The output of 18 main products and the quantity of petroleum processed in the petrochemical system overfulfilled state plan targets. The overfulfillment was particularly great in the case of products for agriculture, light industry, textiles and the market: chemical fertilizer output was 12,376,000 tons, 8.1 percent over plan, sulfuric acid output was 7,806,000 million tons, 23.9 percent over plan, sodium carbonate output was 1,651,000 million tons, 7.9 percent over plan, and the output of plastics, dyes, and paints was 10.3 percent, 32.1 percent and 13.6 percent above plan respectively (see table for details).

There was a steady improvement in product quality. Jilin's Songjiang brand octyl alcohol, Shanghai's Dafeng brand oxalic acid, Mudanjiang's Yinxi brand oxalic acid, Nanjing's Hongsanjiao S-101 vanadium sulfate catalyst, Beijing's Yanshan brand ethylene glycol, Shanghai's Jingu brand grain fermentation method acetone and butanone, Beijing's Huabiao brand water-soluble 17-88 resin, and Shandong's Qilu brand petroleum benzene won state gold medals. Some 28 products, including Beijing's Baihe brand reduced indigo, Tianjin's Feige brand 28 x 1½ hard-rim bicycle tires, Lanzhou's Tuanjie brand butadiene-styrene rubber, Shanghai's Shanghai brand Q04-2 exterior red nitro-base enamel paint, Shenyang's 660 x 200-II tubeless aircraft tires, Dalian's Dadi brand sodium nitrite, and Guangzhou's Xuehua leather-style rubber-soled shoes won state silver medals, and 158 products won Ministry of Chemical Industry superior quality product certificates.

Energy consumption continued to drop. According to statistics on such high-energy consumption products as caustic soda, calcium carbide, synthetic ammonia and refined petroleum products, the year's energy saving was equivalent to 2.15 million tons of standard coal. In particular, the small-scale

Table 1. 1981 Production Plan Fulfillment for Main Chemical Industry Products

产 品 名 称 a	单 位 b	1980年实际 c	1981年		1981年实际	
			计 划 d	实 际 e	比1980年实际增加% f	比1981年计划增长% g
1. 硫铁矿	h万吨	578	370	587.7	1.7	58.8
2. 磷 矿	万吨	1072	790	1086.2	1.3	37.5
3. 硫 酸	万吨	764	630	780.6	2.2	23.9
4. 纯 碱	万吨	161	153	165.1	2.5	7.9
5. 烧 碱	万吨	192	183	192.3	0.2	5.1
6. 合成氨	万吨	1498	1440	1483.3	- 1.1	3
其中: 大 型	万吨	315	333	335.2	6.6	0.8
中 型	万吨	362	357	366.7	1.3	2.7
小 型	万吨	821	750	780.8	- 4.9	4.1
7. 化 肥	万吨	1232 (6049)	1145 (5612)	1237.6 (6089)	0.5	8.1
其中: 氮 肥	万吨	999.3(4759)	945 (4500)	985.6 (4694)	- 1.4	4.3
磷 肥	万吨	230.7(1282)	199 (1106)	249.4 (1385)	- 8.1	25.3
钾 肥	万吨	2 ( 8)	1.5( 6)	2.55(10.2)	27.5	70
8. 农 药	万吨	53.2	39	48.4	- 9	24.1
其中: 高效低毒	万吨	19	11	14.1	-25.8	28.2
9. 塑 料	万吨	89.7	83	91.5	2	10.3
10. 合成橡胶	万吨	12.3	12	12.5	1.6	4.2
11. 轮 胎	i万套	1446	660	728.7	-36.5	10.4
12. 染 料	h万吨	6.5	5.8	7.6	17.8	32.1
13. 油 漆	万吨	48	42	47.7	- 0.5	13.6
14. 电 石	万吨	152	20	151.3	- 0.5	26
15. 乙 烯	万吨	49	52	50.5	3	- 3
16. 纯 苯	万吨	36	35	35.1	- 2.4	0.5
17. 精甲醇	万吨	29.8	31	34.6	16.1	11.6
18. 冰醋酸	万吨	12.4	10	13.8	11.3	38

## Key:

- |                            |                                       |
|----------------------------|---------------------------------------|
| 1. Iron sulfide ores       | 13. Paints                            |
| 2. Phosphate ores          | 14. Calcium carbide                   |
| 3. Sulfuric acid           | 15. Ethylene                          |
| 4. Sodium carbonate        | 16. Pure benzene                      |
| 5. Caustic soda            | 17. Pure methanol                     |
| 6. Synthetic ammonia       | 18. Glacial acetic acid               |
| Large-scale production     | a. Product                            |
| Medium-scale production    | b. Units                              |
| Small-scale production     | c. 1980 actual output                 |
| 7. Chemical fertilizers    | d. Plan                               |
| Nitrogen fertilizers       | e. Actual                             |
| Phosphate fertilizers      | f. 1981 actual output increase over   |
| Potassium fertilizers      | 1980 output, percent                  |
| 8. Agricultural pesticides | g. 1981 overfulfillment of 1981 plan, |
| High-effectiveness, low-   | percent                               |
| toxicity pesticides        | h. 10,000 tons                        |
| 9. Plastics                | i. 10,000 units                       |
| 10. Synthetic rubber       |                                       |
| 11. Tires                  |                                       |
| 12. Dyes                   |                                       |



nitrogen fertilizer industry further decreased energy consumption, with its average consumption of the two types of coal per ton of output down 5 percent from the previous year, and its electricity consumption down 2.7 percent, achieving a total energy saving equivalent to 960,000 tons of standard coal for the year.

Economic results were fairly good. Total chemical output (for the chemicals system) was 42.6 billion yuan, 9.5 percent above plan. Zhejiang, Tianjin, Anhui, Jiangsu, Shanghai, Beijing, Hunan, Hubei, Yunnan, Fujian, Guangdong and Xinjiang had a higher output value than in the previous year. Although Sichuan Province experienced serious flooding, its output value was essentially maintained at the previous year's level. The profits paid to the higher levels by all branches were 700 million yuan above estimates at the beginning of the year.

2. Preliminary Readjustment of Product Structure. During the year, while continuing to increase output of products for agriculture, the industry actively stepped up its production of chemical products urgently needed by light industry, textiles, and urban and rural markets. The output of products for light industry and textiles increased from a share of 34.4 percent in the previous year to a share of 35.6 percent. Although there was an inadequate supply of raw materials and inadequate production capacities, as a result of utilizing existing potential, the production of such short-supply products as sulfuric acid and sodium carbonate nonetheless increased by 167,000 and 42,000 tons respectively from the previous year. As a result of changes in the product structure, many products became more marketable. The output of phosphate fertilizer was up by 130,000 tons from the previous year, and the nitrogen-phosphorous ratio rose from 1:0.23 to 1:0.25. In order to meet the needs of expanding chemical fiber production, the dye industry added 30 new products, so that the share of dyes for chemical fibers in total dye output rose from 25 percent in the previous year to 28.7 percent. The paint industry strove to increase its output of natural-resin paints, phenolic paints, bitumen paints and amide paints, which were urgently needed for civilian construction, light industrial market, and farm tools; the output of these products increased by 16.6 to 25 percent. As a result of changes in market requirements, the rubber products industry increased its output of wheelbarrow and bicycle tires, which are urgently needed in the cities and the countryside, by 81.2 percent and 19.3 percent respectively. In addition, it developed new varieties of butyl rubber inner tubes with excellent air-tightness, which accounted for more than 30 percent of total inner tube output. At the same time, it decreased its output of slow-selling items. Because of excessive production of vehicle tires in 1980, the fact that large numbers of many types of vehicles were put into storage in 1981, and the fact that the readjustment of heavy industry meant a decrease in output of motor vehicles, heavy construction vehicles and tractors, output was decreased from 11.46 million tires in the first half to 7,288,000 tires thereafter, a decrease of 36.5 percent. New uses were found for organosilicon and organofluorine products in such areas as textiles, food products, medicine, machinery, and construction. Shanghai and Tianjin introduced more than 400 new chemical varieties during the year, which promoted readjustment of the product structure and increased output.

3. Initial Results From Industrial Branch Readjustment. According to incomplete statistics, in 1981 more than 350 small plants with high energy consumption, poor quality and unmarketable products were shut down. In 1980 and 1981, 255 small nitrogen fertilizer plants were shut down, with the result that the production cost of pure ammonia decreased by 1.4 percent from the previous year, and the trade's total losses were cut by 41.5 percent. The number of vehicle tire production plants and locations was cut from 163 to 58, and some plants in the paints, dyes, agricultural pesticides industries were also shut down or shifted to other products. Enterprise readjustment had a major effect in making production responsible to demand and improving product quality and economic performance.

4. Enterprise Integration and Reorganization. Operating on the principle of comprehensive utilization of raw materials, improvement of management, and improvement of economic results, the Shanghai Petroleum Refinery, the Gaoqiao Chemical Plant, the Gaoqiao Heat and Power Plant, the Shanghai No 2 Chemical Fiber Plant, the Shanghai No 2 Synthetic Detergents Plant, the Shanghai Agricultural Pesticides Plant, the Shanghai No 15 Dye Chemicals Plant and the Shanghai Petrochemical Research Institute, all located in Gaoqiao Prefecture, Shanghai, formed the Shanghai Gaoqiao Petrochemical Corporation in November 1981. The interconnections between the seven plants and one institute are rather close, and after their amalgamation they not only were able to make full use of raw materials and energy and further increase the depth of processing, but in addition were able to centralize control, unify dispatching, make full use of support systems, and improve economic results. In 1981, while crude oil processing dropped by 310,000 tons from the previous year, the Shanghai Petroleum Refinery realized 15 million yuan more in profits than in the year before. The other plants all fulfilled or overfulfilled their 1981 production tasks. After Shanghai established the Gaoqiao Petrochemical Corporation, the Nanjing Petroleum Refinery, the Qixiashan Chemical Fertilizer Plant, the Nanjing Alkylbenzenes Plant, the Nanjing Chemical Plant, the Zhongshan Chemical Plant, the Nanjing Plastics Plant and the Changjiang Petrochemical Plant, all in Qixiashan and Yanziji Prefectures, Nanjing, formed the Jinling General Petrochemical Corporation. The seven plants included in this corporation had initially been under the leadership of their individual branches. After the interbranch corporation was organized, the original lines of subordination were cut, which was a breakthrough in reorganization of existing enterprises. The Taiyuan Chemical Plant, the Taiyuan Phosphate Fertilizer Plant and the Taiyuan Nitrogen Fertilizer Plant also combined, reestablishing the Taiyuan Chemical Corporation. Many provinces, municipalities and autonomous regions have established specialized chemical fertilizer, minerals, rubber and chemical raw materials corporations, which has promoted specialization and cooperation. The chlorine and soda, chemical reagents, carbon black, and chemical machinery branches have already organized or are now organizing various loose economic unions. The chemical and rubber industry bureaus of 14 cities under provincial jurisdiction proceeded from past cooperation and competition to formal establishment of economic cooperation organizations and instituted cooperation in production, research, environmental protection, foreign trade, and information. Units in 17 cities and 21 bureaus are now participating in this cooperation.

5. Overfulfillment of Capital Construction Assignments, Reaping of Investment Benefits. In 1981 there was further contraction of the capital construction front and improvement in investment results; the number of products put into production and the number of individual projects exceeded plan targets. Newly added production facilities for major products included capacities for 350,000 tons of synthetic ammonia, 276,000 tons of chemical fertilizer, 45,000 tons of butadiene, 70,000 tons of iron sulfide ore, and 50,000 tons of borax. Other than several projects which were continued by permission, the main imported large-scale petrochemical and chemical fertilizer equipment sets have been connected, given protective treatment, and inspected. By the end of last year, 90 percent of the equipment from abroad had been connected and maintenance had been carried out on it according to requirements.

6. Overfulfillment of Chemical Products Export Plans. In 1981, export of unified-distribution ministry-controlled chemical products such as tires, various types of rubber-soled shoes, polyvinyl chloride [PVC], high-pressure PVC, polypropylene, ethylene glycol, concentrated nitric acid, methanol, calcium carbide, and trichloroethylene totaled 1,024,000,000 yuan, 6.67 percent above plan. A total of 153,800 tons of chemical raw materials were imported, at a cost of \$120 million in foreign exchange.

7. New Scientific Research Achievements. Guided by the policy of supporting the technical modernization of older enterprises, and focusing on readjustment of technological structure and product structure, during the year 33 major research achievements were realized. Constant-pressure gasification of powdered coal and gasification of long-flame coal, the quicksilver method of caustic soda precipitate prevention, and new-process carbon black have already gone into commercial-scale production. Several research results, such as petrochemical catalysts, water treatment agents, new dye varieties, and new agricultural pesticide varieties and [forms] have already been used in production. Techniques for using hardened PVC products in building materials, communications equipment and furniture have made gratifying progress. As a result of energetic cooperation by research, design, production and construction units, preliminary control of waste pollution by certain enterprises has been achieved.

8. Intensified Universal Employee Training. By the end of 1981, 3,000 leadership cadres in province, municipality and autonomous region chemical bureaus and offices and key enterprises had undergone rotation training, accounting for more than 80 percent of cadres at this level. Nearly 4,000 technical and management cadres were trained in more than 70 short-term training classes of various types. All aspects of enterprise employee education were developed.

The chemical industry's main problem in 1981 was inadequate economic results: the production cost of comparable products had increased by 0.7 percent from the previous year, the circulating funds turnover period had increased by 6 days, and losses in key enterprises had increased by 59 percent. In addition to such objective factors as increases in the cost of some raw and other materials, increases in certain expenditures and an increase in the enterprises' nonquota burdens, inadequate management is also a major factor. Moreover, much work still remains to be done in readjustment of the chemical industry. As regards product structure, the amounts of fertilizer nitrogen, phosphate

and potassium produced are out of proportion; problems of using high-effectiveness, low-residual-toxicity new chemical pesticides to replace the high-residual-toxicity pesticide "666" have not yet been solved; and fine chemical production for light industry, textiles and the market, and particularly production of daily-use chemical products, has still not expanded enough to meet needs. In enterprise readjustment, many small enterprises with high energy consumption, poor product quality, poor economic performance and output in excess of demand should be closed, merged or switched to other products.

Based on the requirements of further readjustment of the national economy, in 1982 the chemical industry must focus on improving economic performance as it continues to implement the readjustment policy, carry out complete enterprise consolidation stage by stage, increase output while saving energy, and increase economic results while raising production standards.

As regards readjustment of product structure, more unused potential must be found in the production of phosphate ores, iron sulfide ores, chemical fertilizers, sulfuric acid, sodium carbonate, caustic soda, plastics, and all types of rubber-soled shoes, and an energetic effort must be made to increase production and to sustain increased output levels; the quality of tires, agricultural pesticides, paints and dyes must be improved and the selection revamped; and fine chemical production, particularly production of daily-use chemical products and accessory materials, must be energetically developed.

In the course of comprehensive enterprise consolidation, we must first concentrate on the effective work in large mainstay enterprises, use consolidation to improve their technical management and operating quality, and make thorough use of their mainstay role. The other enterprises must proceed with consolidation on their own initiative in accordance with the requirements stated by the party Central Committee and the State Council.

At the same time, we must emphasize technical modernization of older plants, vigorously and steadily carry out enterprise combination and reorganization, strengthen the dissemination and use of scientific research and technical achievements, and carry out comprehensive employee training, so that in the coming year the chemical industry will provide more and better chemical products for the various departments of the national economy and will continue to progress during readjustment.

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## CHINA'S IRON AND STEEL INDUSTRY IN 1981

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[Text] In 1981 China's iron and steel industry continued to progress during readjustment. During the year, the industry conscientiously carried out the important policies of further economic readjustment and further political stability, and while the state decreased the iron and steel output plan and smaller amounts of energy were available, it achieved a positive attitude, overcome many difficulties, and made new progress.

### 1. New Progress

(1) Plan targets were overfulfilled for the great majority of major products. For 3 years running, overfulfillment for rolled steel has exceeded that for steel, and overfulfillment for steel has exceeded that for iron. But compared with last year, the output of all major products decreased somewhat; the pattern of decrease was exactly opposite to that of overfulfillment: the drop in iron was greater than that in steel, and that in steel was greater than that in rolled steel. The iron-to-steel ratio dropped from 1.024 to 0.96, the lowest value since the 1970's (see Table 1).

(2) There was further readjustment of the product structure as well as new improvements in quality. In particular, small-sized rolled steel, which is used in the construction industry and as starting materials for making wire and nails, has been in insufficient supply for several years, but now the supply is assured. Welding rod and galvanized pipe now can meet demand as well. Sheet metals needed by the light industry and the market, output of which had increased by 30 percent in each of the 2 preceding years, increased by an additional 25 percent, while output of silicon steel and band steel also increased by 20 percent. Thirty products, including shipbuilding plate, reinforcing screw rod, and high-speed tool steel, can now be series-produced in accordance with international standards. Anshan Iron and Steel Company's automobile wheel rim steel, and Dalian Steel Mill's high-speed tool steel have won gold medals, while eight other products have won silver medals. Since 1979, 8 iron and steel products have won gold medals and 19 have won silver



(3) Energy consumption has continued to drop, with a saving of more than 3.7 million tons of standard coal for the year. Some 276 small steel plants with high energy consumption were closed, decreasing the number of blast furnaces by 346, or 4,800 cubic meters, in addition to which some other blast furnaces were shut down. Following a decrease of 1.1 million tons in heavy fuel oil consumption in the previous 2 years, in 1981 heavy fuel oil consumption was 440,000 tons less than the 1980 level, and oil injection has been essentially eliminated in blast furnaces. Energy consumption per ton of steel at Shougang [Capital Steel Mill], the Anshan Steel Mill and the Hangzhou Iron and Steel Mill decreased to 1.01-1.05 tons of standard coal.

(4) Readjustment of capital construction was resolutely continued in accordance with the state plan, with efforts concentrated on several major projects, including Baogang [Baoshan Steel Mills] and mines. Authorization to continue construction on the first stage of the Baogang project was received on 7 August 1981. By the end of 1981, a total of 1.36 million cubic meters of concrete (62 percent of the total for stage 1) had been emplaced, 110,000 tons of steel framing (71 percent of the total) for the plant buildings had been installed, and 110,000 tons of equipment (30 percent of all imported equipment) had been installed. The bridge approach to the raw materials dock has been completed, installation of the belt conveyor on the auxiliary materials dock is nearly complete, and a materials unloading unit is being adjusted; the No 1 generator set, with a capacity of 350,000 kW, has entered the comprehensive testing stage, and will begin operation in the first half of 1982, while the installation work on the No 2 generator set has reached its peak. Fifty of the 100 ovens in the coking battery, which will have a capacity of 850,000 tons of coke a year, have been completed. The No 1 large blast furnace, more than 110 meters high, with a capacity of 4,063 cubic meters, has already been built to a height of 80 meters, and the top equipment is being installed. The main components for three 300-ton converters have been received. Most of the steel framing for the initial rolling mill has been erected, and preparations for installation of the rolling trains have begun. Work on the seamless tubings mill, which was begun later, has reached the stage of erection of the steel framework.

The nine individual construction completions called for in last year's state plan were all accomplished, in addition to five above-plan projects, resulting in addition of capacities for 4.2 million tons of ore extraction, 2.24 million tons of ore classification, 1 million tons of sintering, and 280,000 tons of coke production, as well as 300,000 tons of cogging mill capacity, and facilities for 190,000 tons of rolled products.

Following 2 years of production testing, the Wuhan Iron and Steel Company's 1.7 meter rolling mill was formally accepted by the state in December 1981. The State Testing and Acceptance Commission concluded that the engineering and construction had been carried out rapidly, that the quality of the main engineering work was excellent, and that the quality of the overall project was good. Products of these rolling mills are all urgently needed by the country.

(5) There were some major successes in scientific research, and employee training was deepened and broadened. In 1981 the iron and steel industry

posted more than 150 major scientific results, including some new metallurgical products for use in light industry, agriculture, the electronics industry and the energy industry, and new energy-saving processes and technologies. Some scientific research institutes and academies strengthened their ties with production, signing research contracts, technical service contracts and contracts for transfer of scientific results with plants and mines. For example, the Beijing General Academy of Iron and Steel is cooperating with the Benxi Iron and Steel Corporation to develop a new process for electros slag remelt which decreases electricity consumption per ton from 1,700 kWh to 900 kWh while increasing productivity by 30 percent, increasing the metal utilization rate by 5 percent, decreasing production costs by 98 yuan per ton and lessening environmental pollution. The Panzhihua and Baotou mines' comprehensive utilization research has made new progress, and the major tasks have all entered commercial or semicommercial-scale testing. New processes and new technologies for recovery of rare earths have been instituted, increasing the recovery rate and decreasing production costs.

Employee training has been intensified everywhere. Last year the metallurgical system gave 8 percent of its employees 1½ months or more of training on leave from production, while 38 percent of all employees took part in study classes, and about 80 percent of leadership cadres of key enterprises underwent rotation training on leave from production. Some enterprises, such as the Taiyuan and Anshan Iron and Steel Companies, have gone from sporadic worker training with no specific plan to regular cultural and technical training; management cadres have begun to be moved forward from ordinary management knowledge to specialized job-related training; and the training of technical cadres has progressed from specialized seminars to research and schooling on leave from production.

(6) The profit targets were met effectively, and the Capital Iron and Steel Company and certain other enterprises managed to increase earnings while decreasing output. In 1981 the iron and steel industry earned 5.2 billion yuan, and 13 key enterprises including Capital, Taiyuan, Baotou, and Panzhihua Iron and Steel Companies succeeded in decreasing production with undiminished or increased earnings. Last year, while cutting its output of steel and iron output by 4.7 and 9.8 percent respectively from the 1980 levels, the Capital Iron and Steel Company cut its production costs by 2.4 percent and increased profits by 9.07 percent from the previous year. Because it began to make use of the advantages of the 1.7 meter rolling mill, the Wuhan Iron and Steel Company had a considerable increase in profits in spite of decreased output. Some medium-size iron and steel enterprises complemented or restructured weak links and achieved considerable increases in earnings. Since 1978, the Tianjin No 3 Rolling Mill has carried out one major modernization project a year and has increased in each of these 3 years. Starting in 1980, the Anyang Steel Mill in Henan raised its own funds to deal with inadequate cogging mill capacity, an inadequate selection of rolled steel varieties, and insufficiently pure pig iron; in 2 years its earnings increased by more than two times.



Table 3. Energy Consumption in the Steel Industry Before and After Readjustment of the National Economy

年 份 a	1978年	1979年	1980年	1981年
b 总能耗 (万吨标准煤)	7380	7269	7090	6496
c 重油消耗 (万吨)	530	471	421	377
d 全行业吨钢综合能耗 (吨标准煤)	2.52	2.28	2.04	1.93
e 重点钢铁企业吨钢综合能耗 (吨标准煤)	1.77	1.57	1.47	1.41
f 重点钢铁企业吨钢可比能耗 (吨标准煤)	1.394	1.285	1.20	1.19
g 重点企业炼铁综合焦比 (公斤)	623	601	585	579

- Notes: 1. The total energy consumption per ton of steel is the ratio of each enterprise's actual energy consumption to its steel output, while the comparable energy consumption is the ratio after subtraction of some noncomparable factors from the actual energy consumption (including energy consumed in other than iron- and steelmaking, and energy consumption in mines, auxiliary mines, ore classification, ferro-alloys, refractories, pipe casting, rolling, coal dressing, and nonproductive processes) and is calculated for comparing domestic enterprises of the same type and comparing foreign and domestic enterprises.
2. The total and comparable energy consumption per ton of steel for key iron and steel enterprises are based on 34 enterprises through 1980 and 32 enterprises starting in 1981.

Key:

- a. Year
- b. Total energy consumption (10,000 tons of standard coal)
- c. Heavy oil consumption
- d. Total energy consumption per ton of steel for entire industry (tons of standard coal)
- e. Total energy consumption per ton of steel in key iron and steel enterprises (tons of standard coal)
- f. Comparable energy consumption per ton of steel in key iron and steel enterprises (tons of standard coal)
- g. Total coke ratio in key enterprises' ironmaking (kg)

2. Some Key Efforts During 1981

In 1981, while implementing the policy of further readjustment of the national economy, the iron and steel industry carried out the following types of work.

(1) Further readjustment of its customer orientation. In 1981, all iron and steel enterprises strengthened their market research and energetically increased the production of vigorously test-produced rolled steel varieties urgently needed by light industry and the market, improved their service quality, and linked production more closely with demand. In keeping with the local demand for metallic materials for light industry and the market, the Shanghai City Metallurgical Bureau carried out relatively systematic surveys of dozens of

product areas from bicycles and sewing machines to wristwatches and electrical appliances, from women's hairpins to children's toys, using the results to draft a product structure readjustment program and specific measures, by which it considerably increased the output of various specialized products and organized product extension. Shanghai's Zandou Shaped Steel Plant, Xinhua Steel Mill and Cold-drawn Shaped Steel Plant produced tooth-shaped steel for sewing machine cloth dogs and treadles which not only decreased the sewing machine plant's number of machining operations, but also increased the steel utilization rate by 40 percent. The Wuhan Iron and Steel Company selected some key products and visited their users, establishing user service files for each industrial branch. When a bicycle plant complained that the stamping loss rate on steel provided from the 1.7 meter rolling mill was too high, the steel mill immediately organized technical personnel to carry out joint investigation with the plant regarding the characteristics, depth of processing, process environment, and use conditions of more than 200 bicycle parts, designated and test-refined several usable steel grades, and assured the processing acceptance rate, so that now the bicycle plant can use more of the Wuhan Iron and Steel Company's band steel for bicycle parts production. A third of the steel strip used in production of the "Fenghuang" bicycle is supplied by the company. In order to serve light industry and the market better, in 1981 the steel enterprises also signed 2-year fixed supply location agreements with more than 440 plants producing 10 daily use articles, including bicycles, sewing machines, televisions, tape recorders, washing machines and household electric clocks. Some specialty steel plants actively increased the proportion of their products which went to light industry and the market.

Many enterprises, particularly specialty steel plants, have striven to support technical modernization of all departments of the national economy by developing and producing high-strength, corrosion-resistant, heat-resistant, economical new materials and varieties so as to replace imports, fill gaps and meet user demands, and have promoted the development of the iron and steel industry itself. For example, rollers of the Wuhan Iron and Steel Company's 1.7 meter rolling machine had always been imported, but in 1980 the Qiqihar Steel Mill began to trial-produce such rolls, and it is now capable of series-producing them, so that these rolls for cold rolling, which can withstand high speeds and high loads and are highly precise, are all produced domestically. Based on the Dalian Chemical Plant's equipment renovation requirements, Dalian Steel Mill provided a type of stainless steel tubing for carbonation towers, which, in contrast to the previously used tubes, which only lasted half a year, were still operating normally after more than a full year. The soda ash output was increased by more than 20 percent, its quality was improved, and annual earnings per tower were increased by a million yuan.

Vigorous efforts to organize availability of rolled steel in the countryside are an important aspect of the iron and steel industry's readjustment of its customer orientation. In the past, rolled steel was a unified distribution commodity, and there were virtually no supply channels for the rolled steel used in the daily life of the 800 million peasants. In the last year, many metallurgical bureaus and enterprises have visited the countryside to investigate its steel needs, particularly for rural housing construction, where wood

can be replaced by steel, and have provided the countryside with a variety of suitable rolled steel. The Capital Iron and Steel Company designed and built three units of steel-raftered houses suited to villages in the suburbs of Beijing, and demonstrated them; they were well received by the peasants. The Anshan Iron and Steel Company used leftover materials to produce 20 steel components for house framing, wheelbarrow frames, cart canopy frames, cellar door frames, courtyard door frames and the like, and in 3 months it sold 8,000 roof trusses and 2,000 main door frames. The Jinan No 2 Iron and Steel Mill visited 13 counties in 3 prefectures to conduct surveys, then designed and produced 2 series (34 varieties) of steel house-framing members; the price of the structural members for an ordinary 3-room house was about 650 yuan, 30 percent lower than wood members. In addition, it made deliveries to the construction sites, and nearby peasants came in large numbers to place orders. Many enterprises are also opening separate sales operations to sell rolled steel directly to production teams and the peasants. The enterprises under the Hebei Province Metallurgical Bureau system have established 9 rolled steel retail stores, and last year they sold nearly 10,000 tons of rolled steel.

Some iron and steel enterprises made a major effort to match advanced international standards, with good results. In 1981, exports of rolled steel, pig iron, refractories and ores earned more than \$600 million in foreign exchange. In addition to direct export of iron and steel products, the industry also provided large amounts of rolled steel for the export products of the shipbuilding and machine-building departments. As a result of stiff comprehensive quality control and key technical efforts, the quality of the shipbuilding steel plate produced by the Shanghai No 1 Steel Mill has been considerably improved, it has been approved by the United Kingdom and West German classification societies, and oceangoing vessels made with this steel plate have already been handed over for export. New varieties of high-speed tool steels with quality meeting advanced international standards have been developed; drilling and cutting tools were made for export last year.

(2) Energetic efforts have been made to expand scientific and technical work. In 1981 the iron and steel industry continued to concentrate on saving energy, improving quality and increasing varieties, with emphasis on the dissemination of 37 effective technical renovation experiences. These new processes and technologies can obtain good economic results with decreased use of funds. The advanced "fine screening and regrinding" technology is being adopted by mines, and the share of concentrates has increased from 65.1 percent in 1978 to 66.8 percent in 1981, making it possible to save 660,000 tons of coke in ironmaking. The "low-carbon thick materials" process has been adopted by sinter plants, decreasing the fuel consumption per ton of sinter from 89 kg to 72 kg over 3 years, thus conserving fuel equivalent to 740,000 tons of standard coal. A new technique of intensified steelmaking has been adopted for electric furnaces, making it possible to decrease the steelmaking time by 50 minutes, so that electricity consumption per ton of steel drops by 80-100 kWh. This process was being used by 10 specialty steel plants in 1981. In addition, 13 key steel mills were adopting the technique of in-ladle argon blowing, which improves steel quality.

During the year, many enterprises carried out extensive mass-style technical renovation and rationalization suggestion activities in connection with activities aimed at increasing earnings and savings on expenditures. Since the Tianjin Metallurgical Bureau began activities under the slogan "Everyone Contribute a Thousand Yuan" (meaning that every worker was to increase earnings or decrease expenditures by 1,000 yuan for the state) at the beginning of the year, rationalization suggestion activity has been developing rapidly. The personnel of the perforating shop of the seamless pipe mill proposed 107 measures to decrease energy consumption, with the result that machining costs decreased from 57.28 yuan per ton to 48.5 yuan per ton. In July, Shop No 5 of the Shanghai No 5 Steel Mill began a rationalization suggestion drive in which 36 suggestions were collected. Nineteen have already been implemented at a cost of 50 million yuan; they increased earnings by 410 yuan during the year. There was further development of quality management groups. According to statistics for 35 key enterprises, 5,600 of them are already in existence. In the Anshan Iron and Steel Company alone, the work of quality management groups has resulted in an economic effect of 12 million yuan in 2 years.

During the year, many enterprises proceeded on the basis of their own conditions and used flexible advanced technology to carry out technical reform, achieving good results. It is particularly worth mentioning that at the end of 1981, 167 specialists and professors from 37 metallurgical enterprises, scientific research and design units and advanced schools throughout the country carried out a technical evaluation of the Capital Iron and Steel Company's new No 2 blast furnace and concluded that this domestically designed and built blast furnace was technically advanced and economically effective. It used more than 30 new domestic and foreign technologies, including a top-fired hot-blast stove, a hopperless [wuliao 2477 2436] bell top, and an automatic charge control system. Following the study of 2 years' production experience, its coke ratio was decreased by 390 kg and its overall fuel ratio was 484 kg, while its utilization factor was above 2; this is advanced performance by international standards. Technology transfer agreements have already been signed with companies in the United Kingdom and Luxembourg for the powdered coal injection technology and top-fired hot-blast stoves used in this blast furnace. Their experience proves that certain links in China's metallurgical industry could match advanced international standards in not too long a period as a result of technical modernization.

(3) The economic responsibility system has been actively promoted. In the last half year, after its experiment in increased autonomy, the iron and steel industry introduced the economic responsibility system on a broad scale. Currently the great majority of key enterprises have instituted partial retention of profits or profit and loss contracting, and the metallurgical systems of 17 provinces, municipalities and autonomous regions have instituted industry-wide profit contracting or partial retention of profits. The industry has promoted the economic responsibility system, linked together responsibilities, powers and interests, effectively united the state, the collective and the individual, gradually smashed the "big rice pot" and egalitarianism, effectively enlisted the enthusiasm of all employees, promoted the improvement of enterprise management, and helped increase earnings and decrease expenditures.

In the process of promoting the economic responsibility system, a group of enterprises, typified by the Capital Iron and Steel Company, whose leadership's thinking and approach were correct, made a major step toward running effective socialist enterprises and improving economic results, which gave them good experience. The Capital Iron and Steel Company's experience in this area is relatively comprehensive and representative, and thus it has received wide attention in the metallurgical industry. Its main experiences were as follows:

a. When promoting the economic responsibility system it did not begin with distribution, but with implementing the economic responsibilities of the enterprise toward the state. It stressed conscientious adherence to the national planned economy, level-by-level breaking down of all of the enterprise's economic responsibilities to the state, going as far as the workshift and the individual, so that all plants, mines, workshops, shifts and employees clearly understood their responsibilities toward the state, rather than going abroad in circles with bonuses and distribution.

b. When setting contract or guaranteeing indicators, it used high standards and strict requirements, and constantly used advanced indicators. Many of the indicators require a further improvement from advanced levels that have already been achieved, and do not allow a retreat from levels already attained. For example, the blast furnace coke charge ratio averaged 420 kg in the first half of last year. In the second half-year the contract or guarantee indicator was set at 408 kg, while the actual performance was 404 kg.

c. The steel mills treated the introduction of the economic responsibility system as a major transformation of the enterprise and conscientiously promoted changes ranging from the form of production to the form of production management. All functional departments underwent a series of profound changes related to the corporation's overall management objectives, ranging from job content and management forms to the management system. Plan management was changed over from the previous use of production, technical and financial plans to a comprehensive management plan, and all of the plant's production technology management activities were integrated. The general dispatching office not only kept constantly aware of the dynamics production, but comprehensively monitored production, sales, shipping and receipts, so that it became the corporation's "general manager."

d. In regard to bonuses and distribution, it adhered to the principle of distribution according to work and further eliminated egalitarianism. It set up different evaluation coefficients depending on the importance of the post, its technical difficulty, the intensity of the labor, and the quality of the work environment, eliminated bonus distinctions, and pursued the policy of more pay for more work. It adhered to the principle that bonuses are incentives for above-quota labor and carried out strict inspection with no "big rice pot" and no making of unprincipled allowances for particular units.

e. It persisted in focusing on improving the ultimate economic result for the state and the entire corporation, in keeping with the characteristics of an integrated complex. It clearly specified that only if the entire corporation completely met its economic responsibilities to the state would the individual

factories and mines be able to draw the specified proportion of funds; otherwise, even if the units eligible for bonuses fulfilled their contract or guarantee conditions, they could only expect about 80 percent of the proportion of profits they would otherwise have received, while the remainder would be paid only after the corporation had completed its profits assignment. In addition, it included cooperative relations between all departments, factories and mines and higher- and lower-level working procedures in the economic responsibility system and monitored them strictly. In this way it avoided a situation in which the integrated complex is not integrated, but each element goes its own way, makes its own calculations, and gains partial and local benefits while the company and the state do not receive any real benefits.

f. It adhered to the principle of ideological leadership and permeated the process of carrying out the economic responsibility system with ideological and political work so as to stimulate the workers' initiative. Imbalances between production duties and political work have been eliminated at the Capital Iron and Steel Company and it now moves forward like a cart on two wheels. The production departments have praised the political departments for major efforts and great success in promoting the economic responsibility system, and the political departments are strengthening their ties to production and all types of functional work and bringing ideological and political work to the front line, striving to establish both material and spiritual culture, and to improve economic results and inspire a revolutionary spirit, resulting in major changes in the situation at the Capital Iron and Steel Company.

The introduction of the economic responsibility system also further promoted overall consolidation of the enterprise, technical renovation and modernization, and the strengthening of democratic management of the enterprise. Certain major policy decisions were discussed by the council of workers' representatives and became conscious mass-style actions, so that the enterprise's production technology, management and economic results all were raised to a new level.

### 3. Problems and Plans for 1982

Since the iron and steel industry began to implement the policy of readjustment of the national economy, it has achieved considerable progress. However, there is still a great number of problems: the number of varieties is still insufficient to meet needs, the quality of some products does not meet user requirements, mine production has not fully adapted to ironmaking needs, energy consumption is still rather high, environmental pollution is still rather serious, last year the profits of some enterprises fell farther than their output did, and as a result of transport difficulties and poor management, the stocks at some steel mills have increased. Accordingly, improving quality, increasing the number of varieties, conserving energy, controlling wastes and improving overall economic results are the iron and steel industry's major tasks during the readjustment. In 1982, the iron and steel industry's focus should be on further improving economic results, effective service and effective work. It should strive to provide society with marketable, usable products, to decrease production costs and increase profitability per unit output and the funds utilization rate. Specifically, it should strive to increase its output of rolled steel which is in short supply on the market and to improve the quality of

certain rolled steel products, particularly such items as shipbuilding plates, pipes and shaped sections which are produced in accordance with international standards. It should make a major effort to provide new rolled steel varieties that are urgently needed for technical modernization and product upgrading in the various departments of the national economy, in particular by developing high-strength, corrosion-resistant, high-temperature-resistant, pressure-resistant alloy steels and low-alloy steels based on resources with which our country is plentifully supplied, such as vanadium, tungsten, molybdenum, niobium and the rare earths. It should further decrease energy consumption and the iron-to-steel ratio, increase the proportion of continuous casting, and begin to focus on modernizing some rolling mills and the associated steel-making facilities. The focus of capital construction should still be on construction at the Baoshan Iron and Steel Complex and on mine construction. At the same time, the entire metallurgical system must conscientiously study the Capital Iron and Steel Company's experience, further promote the economic responsibility system, carry out effective comprehensive enterprise consolidation, make a success of employee training, and effectively disseminate the results of key scientific efforts and scientific advances so that the economic performance of the iron and steel industry will be further improved.

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## CHINA'S BUILDING MATERIALS INDUSTRY IN 1981

Beijing ZHONGGUO JINGJI NIANJIAN (1982) [ALMANAC OF CHINA'S ECONOMY (1982)] in Chinese 1982 pp V 202-V 204

[Article by Tong Shichun [0157 0013 2504]]

[Text] Continued Development During Readjustment of the National Economy

In accordance with the directives of the Central Committee leadership and the general policy of readjustment, in 1981 the state and the various local people's governments took a series of steps to speed up the development of production of such building materials as cement and plate glass. For example, major support was given to these industries in terms of funds, raw and other materials, and fuels; the tax rate on cement and plate glass was decreased from the past level of 15 percent to 10 percent, while the rate for cement plants at the county level and below was decreased to 5 percent; and some rolled steel and cement were specially allocated to support the production of structural members for rural housing by the building materials departments. The concern and support of the party and state created the conditions for development of the building materials industry.

In 1981, with the exception of cement pressure pipes and cast stone, the plans for which was not completed because of a decrease in demand, the other 18 of the 20 main building materials industry products (including nonmetallic mineral products produced under building materials industry subordination) all overfulfilled plan quotas. Cement output was 84 million tons (including 25,055,000 tons in large- and medium-sized plants), 18.8 percent above the year's quota and up 5.2 percent from the previous year. Plate glass output was 30.64 million standard crates, (including 18.36 million standard crates from large- and medium-sized plants), 20.6 percent above the year's quota and up 10.6 percent from the previous year. Output of bathroom fixtures and glazed bricks fulfilled state plan quotas more than 2 months in advance, was up 25 percent and 24 percent respectively from the previous year; output of asbestos cement tiles, footing brick, industrial mica, graphite, asphalt felt, marble slabs, granite slabs, and terrazzo was up in varying degrees from the previous year.

The new light building materials industry, which began to develop in 1975, made new progress in 1981. Compared with last year, output of various types of



gypsum board was up 15.7 percent, output of aerocrete was up 21.9 percent, and output of cinder block and ceramzite concrete increased considerably. The amount of framed light panel construction completed using the new light building materials totaled 250,000 square meters.

In order to steadily decrease wood use in rural housing construction, in 1981 some 2 million cubic meters of reinforced concrete rural-housing structural members were specially supplied to the countryside, an increase of 67 percent from the previous year. These structural members are sufficient for the construction of housing for 1.54 million households and can save the state 4 million cubic meters of wood while taking 540 million yuan out of circulation.

In order to meet user and market requirements, the output of all varieties of building materials was increased and quality was further improved. The acceptance rate for cement at the time of shipping from large- and medium-sized cement plants was maintained at last year's record level of 99.99 percent. The proportion of plate glass of grade 1 reached 78 percent, somewhat higher than the previous year. The Benxi, Qixin, Datong, Guanghua, Qingdao and Longtan Cement Plants received state silver medals for superior-quality products, and 46 building materials and nonmetallic mineral products were judged to be Ministry of the Building Materials Industry superior products for 1981.

There were also new achievements in building materials industry capital construction in 1981. The Wushan Cement Plant in Gansu and the No 2 kiln in the Baimashan Cement Plant in Anhui were completed and put into operation, adding 550,000 tons of new capacity. The rock wool shop of the Beijing Xinxing Building Materials Plant, which used imported equipment, was completed and put into operation; its products were welcomed by the construction departments and other industrial departments. The Pingdingshan Cement Plant in Henan and the Xinjiang Cement Plant's No 3 kiln were largely completed during the year and have begun trial operation. The Jidong, Huaihai and Ningguo large-scale cement plants, which used imported equipment, are under construction or in an intense stage of preparation.

#### Activities Related To Improving Economic Results

In 1981 the building materials industry departments carried on the following work in connection with improving economic results:

1. Implementation of the Economic Responsibility System, Technical and Economic Policy Research. In 1981, economic accounting was intensified in the building materials industry enterprises, and various types of economic responsibility systems were instituted. A group of advanced units with good economic performance such as the Dalian Glass Plant, the Xiangxiang Cement Plant and the Jinan Cement Plant emerged. In 1981 the Dalian Glass Plant realized 9,237,000 yuan in profits, up 8.3 percent from the previous year, and the amount of circulating capital committed per hundred yuan of output value was 11.7 yuan; these figures were records for the plant. The Xiangxiang Cement Plant realized a total of 17,351,000 yuan in profits, up 4.6 percent from the previous year, circulating funds committed per hundred yuan of output value

totaled 12.71 yuan, and the funds profitability rate (in terms of the original figure) was 25.74 yuan, all of which were advanced figures for the industry.

During the year, the building materials industry system further strengthened technical and economic policy research. The province, municipality and autonomous region building materials bureaus, the relevant Ministry of the Building Materials Industry bureaus and scientific and technical commissions, the China Silicate Society carried out research and discussion of technical and economic subjects and proposed additional good suggestions based on earlier research. These included a suggestion to decrease the tax rate on cement and plate glass products, a suggestion to deduct a percentage at the key nonmetallic mineral products mines in order to provide a source of funds for simple reproduction, a suggestion that industrial slag be made available without cost or for an indirect fee, and the suggestion that the number of small plate glass plants with three production units or fewer be limited. All of these received serious attention from the relevant quarters, and some have been accepted for implementation by the relevant departments.

2. Industrial-Branch Production Competitions and Product Quality Inspection and Comparison. Starting in 1977, the cement industry organized the country's large- and medium-sized cement enterprises for a "five comparisons" competition involving comparison of product quality, equipment management, mine management, dust-removal management, and rotary kiln management, with one evaluation a year, and encouraged the enterprises to compare themselves with each other, learn from each other, compete with each other, help each other and surpass each other. The results were good. In 1981, the previous method in which only the superior units were ranked was replaced by a method in which 52 large- and medium-sized plants were ranked, which stimulated all plants to involve themselves more actively in the competition. The cement enterprises which won first place in the five areas noted above were: the Huaxin Cement Plant (product quality), the Liulihe Cement Plant (equipment management), the Yongdeng Cement Plant (mine management), the Dukou Cement Plant (dust-removal management), the Huaxin Cement Plant (wet-process rotary kiln management), the Gongyuan Cement Plant (dry-process rotary kiln management), and the Mudanjiang Cement Plant (semidry-process rotary kiln management). Product quality inspection and comparison were organized for all building materials industry products, and the superior units were selected, which promoted improvement of product quality in all branches. Other than cement, the first place winners in the quality inspections and comparisons for 1981 included the Qinhuangdao Yaohua Glass Plant's Yaohua brand plate glass, the Changchun Tempered Glass Plant's tempered plate glass, the Jinzhou No 5 Plant's quartz glass instrument containers, the Tangshan Construction Ceramics Plant's Qianjin bathroom fixtures, the Wenzhou Face Brick Plant's Xishan brand glazed brick, the Guangdong Shiwan Building Construction Porcelain Plant's Jianshe brand ceramic brick, the Beijing Marble Plant's Huabiao brand natural marble panels, the Shandong Ye County Marble Plant's Laizhou brand snow-white marble panels, the Shanghai Asphalt Felt Plant's Yuexing brand asphalt felt, the Heilongjiang Qiqihar No 9 Brick Plant's brick, and the Hunan Linxiang Tile Plant's tile.

3. Dissemination of Scientific Research Results and Performance of Technical Modernization. In 1981, research on building materials achieved some major successes. Some 78 key research projects met their goals; 12 are of major importance for development of the building materials and are closely related to production. For example, new technology for out-of-kiln cement analysis underwent commercial-scale testing at the Pei County Cement Plant in Jiangsu and the Xinjiang Cement Plant, providing large amounts of reliable data, so that clinker heat consumption was decreased to about 950 kcal/kg. During the year, more than 60 research projects underwent evaluation at various levels, including 31 at the national or ministry level. The new Luoyang float glass process underwent national-level evaluation by the State Scientific and Technical Commission, and was found to give good product quality, high output, and high economic effectiveness and to be a new direction in the development of China's glass industry. In 1981, after summarizing the research results of recent years, the building materials departments' research institutes presented 297 scientific research results suitable for use in technical modernization of the building materials industry. A low-temperature silicate cement clinker burning method underwent production testing in 1981, giving a 17 percent increase in yield and saving 12 percent on coal. Thirty-six cement plants have adopted a new magnesite kiln lining as a replacement for the earlier alumina kiln lining, achieving the following results: the safe operating period of rotary kilns was increased in 27 plants (it was 180 days or more in 19 enterprises), and the average clinker grate output per hour was increased by 2.84 percent in 22 plants, the average clinker grate increase was raised by 36 points in 21 plants, and the equipment operation rate was increased by 3.83 percent in 21 plants. Heat-resistant steel chains are being used in some wet-process cement kilns, decreasing clinker heat consumption by 26 to 66 kcal, increasing the clinker grate output per hour by 2-4 percent, and raising the clinker grade to various degrees.

4. Job and Technical Training, Promoting Improvement of Management and Technical Standards in All Branches. In 1981, in addition to continuing effective advanced and intermediate building materials education and achieving a 13 percent increase in the number of students, emphasis was laid on on-the-job training of cadres and workers in the building materials system. Ministry cadre schools held 4 industrial management classes, which trained 367 leadership cadres at various levels. In addition, national and local technical training classes in various specialties were held. The cement industry system alone took various approaches and trained 1,027 management and technical personnel and technicians. The Hebei Province building materials system held 6 job training classes and trained 471 persons; it held 403 technical training classes on brick, tile, cement and the like, training more than 7,000 persons.

5. System Reform Experiments Yield Preliminary Results. In 1981, some building materials branches experimented with the organization of economic unions in order to promote the development of production, achieving rather good economic results. For example, the Changcheng Waterproof Materials Corporation, which includes 12 asbestos felt plants, solved the problems of supply, production and marketing rather effectively and assured considerable progress compared with the previous year in all economic indicators: while

improving product quality, it increased output by 7.49 percent, increased output value by 6.27 percent, and increased profits by 0.5 percent (if the factor of inflation were deducted, the increase in profit would be 10.46 percent). In order to coordinate all work by production organizations subordinate to different management departments, the aerocrete industry established the China Aerocrete Industry Association. This association provided many services to production enterprises and promoted the development of production.

#### Bringing Into Full Play the Initiative of All Parties in Running the Building Materials Industry and Strengthening Domestic and International Technical and Economic Interchange

China's building materials have an extensive market both at home and abroad, and supply has long been insufficient to meet demand. Since readjustment was instituted, the demand for building materials has continued to rise. In recent years, as agricultural production has expanded and the peasants' living conditions have improved, there has been an upsurge of rural housing construction, and the 800 million peasants have eagerly wished that the state would provide them with large quantities of attractive, cheap building materials. Under these conditions, expansion of the building materials industry became a development much hoped for by the people throughout the country. In 1981, many localities and departments moved forward in investing in construction. For example, several localities ran jointly-operated plants with the central government, and several user organizations pooled resources to expand building materials enterprises or build new ones; some industrial departments provided domestic compensatory trade funds to the building materials departments, and enterprises in certain other departments changed over to the production of building materials. The state and the building materials departments welcome and support these activities and give preferential treatment to the investors in terms of product distribution policy.

In 1981 the building materials industry had active international technical, economic and scholarly exchanges. It established close cooperative ties with the United Nations Industrial Development Organization and certain developing and developed countries. The United Nations Industrial Development Organization had previously agreed to help China establish two development centers, for cement and new light construction materials, and in 1981 it also agreed to help us establish a glass development center. Based on our agreement with the organization, foreign specialists visited China to provide technical services, and in addition we sent delegations to Europe and the Americas for technical investigations. In August 1981, an academic conference on glass in which representatives of nine nations participated was held in China. In addition, we sent specialists to take part in four specialized international conferences. These activities helped to improve the technical level of China's building materials industry. In addition to 8 project contracts for import of advanced foreign technology which were continued in 1981, 4 additional project contracts and 36 individual-item contracts were signed. New achievements were made in export of building materials, the provision of foreign economic aid, and technical services. We took on economic assistance projects for six countries and sent several hundred technicians and workers and a number of technical experts to these countries to provide technical services.

Although China's building materials industry made considerable progress in 1981, the inability of supply to meet demand still continues. The output of large- and medium-sized cement plants dropped somewhat from the previous year. The economic results of certain enterprises were poor, and losses even persisted in some cases, while the profits of key enterprises dropped somewhat from the previous year. In some cases, scientific research, design, production, construction, and distribution of supplies were not effectively coordinated. In some localities, commune and brigade enterprises were still competing with state-run enterprises for raw materials and small enterprises were squeezing out large ones, exerting an unfavorable influence on production. Management organizations and the management system suffered from a failure to adapt to the development of building materials production. These circumstances must be corrected from now on.

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## CHINA'S COMMUNICATIONS AND TRANSPORT IN 1981

Beijing ZHONGGUO JINGJI NIANJIAN (1982) [ALMANAC OF CHINA'S ECONOMY (1982)]  
in Chinese 1982 pp V 224-V 228

[Article by the General Transport Research Institute of the State Economic Commission]

[Text] In 1981, China's communications and transport work forces overcame the difficulties of insufficient transport capacity, strengthened transport organization work, tapped latent internal potential and surpassed the state transport plan. The state of jamming of coastal ports was reversed and the severe damage to the main trunk lines in the southwest and northwest due to flooding was rapidly repaired, with great accomplishments being achieved.

### 1. Principal technological and economic indices on passenger and freight transport

(1) Volume of transport. The volume of passenger transport in 1981 increased by 12.6 percent over that in 1980, with the year plan being surpassed. The railroads fulfilled 109.3 percent of their plan and the water transport enterprises directly under the jurisdiction of the Ministry of Communications fulfilled 110.9 percent of their plan. Although the railroads and the water transport enterprises under the jurisdiction of the Ministry of Communications surpassed their annual plans by 7 percent and 6.4 percent, respectively, these levels were lower than in 1980. The details are to be seen in Table 1.

(2) Turnover volume. In 1981, there were increases in passenger turnover volume by all modes of transport. The increase for civil aviation was the greatest amounting to 25 percent, followed by an increase for highways of 15.1 percent. There was some increase in freight volume turnover as compared to 1980, with an amplitude of increase for civil aviation of 21.4 percent. For details see Table 2.

(3) Average haul. Because of an increase in the proportion of short-haul passenger transport volume accounted for by highways, there were decreases in the proportion of passenger transport by the railroads and water transport, with the average haul for passengers being lower than in 1980. Because of increases in allocation and transfer of freight, and of coal in particular, across provinces, there was an average extension of freight hauls in 1981 of 23 kilometers. For details see Table 3.

Table 1

(1) 项目 (2) 年份	(3) 客 运 量 (亿 人)					(4) 货 运 量 (万 吨)					
	总5计	铁6路	公7路	水8运	民9航	总5计	铁6路	公7路	水8运	管0道	民9航
1980	34.18	9.22	22.28	2.64	(12)3万人	240,506	111,279	76,017	42,676	10,525	8.89
1981	38.48	9.52	26.16	2.76	(13)1万人	231,605	107,673	71,504	41,490	10,929	9.42
(11) 1981年比 1980年 增长%	12.6	3.3	17.4	4.5	16.9	-3.7	-3.2	-5.9	-2.8	+3.8	+6.0

Note: The figures for railroads in this table and the following table include local railroads.

Key:

- |  |   |
|--|---|
| 1. Item  | 7. Highways   |
| 2. Year  | 8. Water transport                                  |
| 3. Volume of passenger transport<br>(100 millions of people) | 9. Civil aviation                                   |
| 4. Volume of freight transport<br>(10,000's of tons)         | 10. Pipelines                                       |
| 5. Total   | 11. Percent increase in 1981 as<br>compared to 1980 |
| 6. Railroads   | 12. 3.43 million persons                            |
|  | 13. 4.01 million persons                            |

Table 2

(1) 项目 (2) 年份	(3) 旅 客 周 转 量 (亿 人 公 里)					(4) 货 物 周 转 量 (亿 吨 公 里)					
	总5计	铁6路	公7路	水8运	民9航	总5计	铁6路	公7路	水8运	管0道	民9航
1980	2,281	1,383	729	129	40	11,517	5,717	255	5,053	491	1.4
1981	2,500	1,473	839	138	50	11,616	5,712	253	5,150	499	1.7
(11) 1981年比 1980年 增长%	9.6	6.5	15.1	7.0	25.0	0.9	-0.1	-0.8	1.9	1.6	21.4

Key:

- |   |   |
|---|---|
| 1. Item   | 5. Totals   |
| 2. Year   | 6. Railroads  |
| 3. Passenger turnover volume<br>(100 millions of<br>passenger-kilometers) | 7. Highways   |
| 4. Freight turnover volume<br>(10,000's of tons)                          | 8. Water transport                                  |
|   | 9. Civil aviation                                   |
|   | 10. Pipelines                                       |
|   | 11. Percent increase in 1981 as<br>compared to 1980 |

Table 3

(1) 项目 (2) 年份	(3) 旅客平均运程 (公里)					(4) 货物平均运程 (公里)					
	总平均 运(5)	(6) 路	(7) 路	(8) 运	(9) 航	总平均 运(5)	(6) 路	(7) 路	(8) 运	(10) 道	(9) 航
1980	67	150	33	49	1,154	479	514	34	1,184	467	1,575
1981	65	155	32	50	1,247	502	530	35	1,241	457	1,805

Key:

- |  |                       |
|--|-----------------------|
| 1. Item                                    | 5. Average total haul |
| 2. Year                                    | 6. Railroads          |
| 3. Average passenger hauls<br>(kilometers) | 7. Highways           |
| 4. Average freight hauls<br>(kilometers)   | 8. Water transport    |
|  | 9. Civil aviation     |
|  | 10. Pipelines         |

(4) Proportions accounted for by various modes of transport. Of the various modes of transport, railroad transport accounted for the greatest proportion. Railroad passenger transport volume accounted for one-fourth of the total volume, with a passenger turnover volume of close to 60 percent, and freight transport volume accounted for 46.5 percent, with freight transport turnover accounting for 42.9 percent. Calculated as portions of domestic transport, freight transport volume accounted for 47.3 percent and freight turnover volume accounted for 71.4 percent. In respect to the proportions accounted for by water transport, passenger transport volume and passenger turnover volume basically maintained their levels of 1980, whereas the proportions accounted for by freight transport volume and freight turnover volume were higher than in 1980 because of increases in ocean transport. Highway transport played an important role in passenger transport, with passenger transport volume accounting for two-thirds of the total volume and with turnover volume accounting for one-third.

However, their dominant position has not yet been fully manifested in the area of freight transport, with the proportion of freight transport turnover amounting to only 2.2 percent. For details see Tables 4 and 5.

(5) Makeup of freight transport. Because further adjustments of the national economy were carried out, the scope of capital construction was curtailed and reforms were made in industrial structure and product composition, there were continual changes in the makeup of freight transport in 1981. Specifically, there were increases in transport volume of agricultural and light industrial products and in heavy industrial products directly related to agriculture such as chemical fertilizer, pesticides and phosphate ore as well as in energy resources and chemical products, whereas there were great decreases in the volume of transport of iron and steel industry products, machine industry products and capital construction materials. To take volume of railroad transport as an example, in 1981 as compared to 1980, there was an increase from 10.4 percent to 11.5 percent in the proportion of agricultural



Table 4

项 目 (1) 年 份 (2)	(3) 客 运 量 (%)					(4) 旅 客 周 转 量 (%)				
	(5) 合 计	(6) 铁 路	(7) 公 路	(8) 水 运	(9) 民 航	(5) 合 计	(6) 铁 路	(7) 公 路	(8) 水 运	(9) 民 航
1980	100	27.0	65.2	7.7	0.1	100	60.6	32.0	5.7	1.7
1981	100	24.7	68.0	7.2	0.1	100	58.9	33.6	5.5	2.0

Key:

- |  |                    |
|--|--------------------|
| 1. Item                                    | 5. Totals          |
| 2. Year                                    | 6. Railroads       |
| 3. Passenger transport volume<br>(percent) | 7. Highways        |
| 4. Passenger turnover volume<br>(percent)  | 8. Water transport |
|  | 9. Civil aviation  |

Table 5

项 目 (1) 年 份 (2)	(3) 货 运 量 (%)					(4) 货 物 周 转 量 (%)				
	(5) 合 计	(6) 铁 路	(7) 公 路	(8) 水 运	(9) 管 道	(5) 合 计	(6) 铁 路	(7) 公 路	(8) 水 运	(9) 管 道
1980	100	46.3	31.6	17.7	4.4	100	49.6	2.2	43.9	4.3
1981	100	46.5	30.9	17.9	4.7	100	49.2	2.2	44.3	4.3

Key:

- |  |                    |
|--|--------------------|
| 1. Item                                  | 5. Totals          |
| 2. Year                                  | 6. Railroads       |
| 3. Freight transport volume<br>(percent) | 7. Highways        |
| 4. Freight turnover volume<br>(percent)  | 8. Water transport |
|  | 9. Pipelines       |

and light industrial products, there was an increase from 43.3 to 44% for energy resource products, there was a decrease from 17.8 percent to 17.1 percent for iron and steel smelting materials and there was a decrease from 14.6 percent to 13.3 percent for capital construction materials.

(6) Volume of freight handled by ports. In 1981, the volume of freight handled by coastal and Yangtze River ports was 306.57 million tons, an amount equal to that in 1980. Of this, 219.31 million tons was handled by coastal ports, an increase of 0.9 percent as compared to 1980, while 87.64 million tons was handled by Yangtze River ports, a decrease of 2.1 percent as compared to 1980. Imported goods accounted for 34.2 percent of the volume of freight handled by the coastal ports.

(7) Transport efficiency and major technological economy indices. Because of a shortage of capacity and overloading on the main trunk lines of the railways and because of the effects of natural disasters, the speed at which railway freight trains traveled in 1981 was 26.5 km/hour, 0.2 km/hour slower

than in 1980. Stopover time per goods handling was 13.81 hours, an increase of 0.71 hours as compared to 1980. On-time ratios, an increase of 0.71 hours as compared to 1980. On-time ratios for passenger and freight trains were 93.6 percent and 90.5 percent, respectively, decreases of 0.6 percent and 1.2 percent as compared to 1980. Other economic indices are shown in Table 6.

Table 6

Name of index	Year		1981 as compared to 1980 (+ -)
	1980	1981	
Railroad freight train turnover time (days)	3.02	3.21	+0.19
Daily output per railroad freight locomotive (10,000's of ton-kilometers/locomotive)	72.3	71.8	-0.5
Annual output per ton vessel of water transport enterprises under the direct jurisdiction of the Ministry of Communication (ton-kilometers)	41,401	39,572	-1,829
Stopover time in port of ships in major coastal ports (days)	2.9	3.7	+0.8
Stopover time of foreign ships (days)	7.7	10.4	+2.7
Annual output per truck ton of freight trucks in the highway transport sector	39,382	36,737	-2,645

## 2. Transport of key goods and materials and passenger transport

In 1981, under conditions of severe insufficiency of transport capacity, the communication and transport enterprises took coal, foreign trade goods, food, lumber and light industrial products as key goods and materials and transported them according to plan, surpassing their transport plans. They also strove to fulfill their passenger transport assignments. During the period when traffic was interrupted on the Bao-Cheng and Bao-Tian lines because of severe flooding, the communications and transport sectors took active measures, routing passengers and overstocked goods via the Jiao-Zhi and Xiang-Yu lines to the southwestern region and via the Jing-Bao and Bao-Lan lines to the northwestern regions. They also arranged for the transport of materials for disaster relief and necessities of daily life. The civil aviation sector also added 1,000 flights, transporting more than 80,000 passengers.

(1) Coal transport. The volume of transport of energy resources and coal in particular accounted for a very great proportion of the total volume of transport. The volume of coal transported by the railways in 1981 accounted for

39.3 percent of the total volume of freight transport, while the proportion for water transport enterprises under the direct jurisdiction of the Ministry of Communication was 23.4 percent. Assuring fulfillment of coal transport assignments according to plan is related to the overall state of readjustment and development of the national economy. In 1981, our nation's communications and transport enterprises exceeded the nation's coal transport plans ahead of time, thus making a contribution to national construction. Shanxi Province is the principal base for coal production in our nation. Since the founding of the nation, coal output has increased more than 40 times and the volume of goods shipped by rail has increased 90 times, while railroad capacity has only increased 5 times. This has resulted in a serious deficiency in outside transport of coal. Through great effort, Shanxi Province fulfilled its coal transport plan 18 days ahead of time, with a total volume of coal transport of 100.74 million tons, an increase of 8.66 million tons as compared to 1980. Of the latter, 6 million tons was an increase in outside transport. The volume of coal transport increased 12.7 percent as compared to 1980. The principal reasons for having been able to make so good an achievement, in addition to normal work, were primarily that the following measures were taken.

a. The separate routes of the Jing-Tong (Liao) railroad line and the Gou (outer line)-Hai (Cheng) line were utilized. In order to relieve the pressure on the Beijing-Shenyang line, the coal going through Shanhaiguan via the Jing-Tong line was divided into three coal trains. The Gou-Hai line was also utilized, with the coal being divided into two coal trains to southern Liaoning. This lessened the Shenyang axis.

b. Transport organization work was strengthened and transport capacity was increased. Eight pairs of coal trains were added successively on the Shi-Tai line and four pairs of coal trains were added on the Tai-Jiao line.

c. A good grasp was gotten on technological transformation of dock No 8 at the port of Qinhuangdao. For the year as a whole, the volume of coal handled was increased 3 million tons. This played a major role in through-transport by railway waterways.

d. Full utilization was made of coastal and Yangtze River transport to divide up coal transport. For the year as a whole, the amount of coal handled by six major coastal and Yangtze ports exceeded the plan by 7.2 percent. In order to lessen the pressure of transfers at the port of Shanghai, some of the coal was shipped to Jiangsu and Zhejiang Provinces and then was shipped nonstop from coastal ports.

(2) Transport of foreign goods and materials. In the first quarter of 1981, there was severe pressure on ships and freight at our nation's coastal ports. Each day there were at the most 358 foreign trading ships in our ports. This created the most severe jamming of our ports since the founding of the nation. The principal reason for this critical state of affairs was that construction of communications and transport was neglected for a long time under the guidance of the incorrect ideology of the "leftists." Construction of ports and rear area railroads in particular was neglected with

the result that there is a serious shortage of port berths, loading and unloading equipment is out of date and rear area railroad shipping capacity and storage capacity is not adequate. Another factor is that when the annual plan for foreign goods was formulated, overall equilibrium was lacking and there was no conscientious consideration of capacity for receiving and unloading and shipping. When the plan was implemented, balanced transport was not well organized and large numbers of foreign trading ships arrived in concentrated groups. At the same time, there were changes in the makeup of imported goods. There were decreases in such goods as steel, iron ore and sand, for which there was a capacity for receiving and shipping, and large increases in food, sugar, cotton, chemical fertilizers and large equipment for which there is insufficient storage capacity. This raised very great difficulties for receiving and transport work in the ports.

Under the supervision of the leading comrades of the State Council and through the joint efforts of concerned departments and local governments, vigorous measures were taken and marked success was achieved in easing conditions in ports. There was a gradual decrease in the number of ships in the ports and in June there was turnaround for the first time in the severe state of pressure on ships and freight. In order to strengthen management of the plan, a two-level equilibrium system was established for the foreign goods transport plan. In May and September 1981, the State Economic Commission and the State Council Leadership Group on Ports and Harbors held two planning equilibrium meetings in succession at Beijing and Nanjing at which they balanced the volume of foreign goods transport and the receiving and unloading capacities of the ports and determined relevant measures. For the year as a whole, 7,964 foreign trading ships arrived in the ports and 8,027 ships left the ports. The amount of foreign goods imported via ocean transport was 74.97 million tons, or 3 million tons over the quota.

In order to meet the demands for import of foreign trade goods, the state in 1981 also approved the opening of a group of ports and delivery points for foreign trade. By the end of the year, 22 ports had been opened for use. That is, ports along the coast and conditional ports on the Yangtze were opened for foreign trade. In addition, six goods-exchange points at sea were approved at which foreign ships would be permitted to load and unload goods, the 10 ports of Nantong, Zhangjiagang, Nanjing, Jiujiang, Wuhu (including Maanshan), Wuhan (including Huangshi), Chenglingji, Chongqing, Yingkou and Shenhaimen were opened for handling foreign goods transport services and loading and unloading of goods from Chinese vessels and 118 starting points for shipping (20 in Fujian and 98 in Guangdong) were established for handling trade goods to Hong Kong and Macao.

(3) Plans for transport of key goods were fulfilled comparatively well. In 1981, the railroads and water transport enterprises under the direct jurisdiction of the Ministry of Communications fulfilled 111.6 percent of the planned volume of transport for food transport and 106.1 percent of the plan for lumber. The plan for southwestern phosphate ore transported outside via the railways was exceeded by 14.4 percent. The plan for transport of southwestern phosphate ore via the Yangtze River and downstream from Zhanjiang was also fulfilled.

(4) Passenger transport. The volume of passenger transport in 1981 surpassed the transport plan, with a net increase of 360 million persons. The average number of persons transported by water, land and air each day exceeded 10 million persons. The major reasons for the sharp increase in the volume of passenger transport were the great increase in contacts between production and sales departments after the expansion of autonomy for large enterprises; the implementation of the rural agricultural policy, the rapid development of agricultural production and brigade enterprises, the opening of country fair market trade and the brisk exchange between urban and rural areas; increase in the people's income, the initiation of implementation of the newly stipulated policy of home leave for staff and workers and the sharp increase in the number of people traveling within the country, going on home leave and visiting friends; and the great increase of foreign travelers with the opening up of foreign policy, the development of the tourist industry and the increase in international airlines.

The dispatch volume of passenger transport on the railways for a 2-month period in the spring of 1981 increased by 8.3 percent over the same period in 1980. On the peak day, 3.46 million passengers were transported, as compared to 1 million passengers on an ordinary day. During summer vacation time, there was an increase in passenger transport of 3.6 percent as compared to the same period of 1980, with 2.89 million passengers being dispatched on the peak day as compared to 500,000 on an ordinary day. Because of the insufficiency of passenger transport capacity, it was very difficult for the masses to buy tickets for train and boat travel, and, even if they were able to get on a train or a boat, they were very crowded. In order to strive to solve the problems of passenger travel, the communications and transport sectors decided on a policy giving consideration to both passengers and freight and took a number of forceful measures. In 1981, the railways added 1,159 new passenger cars. From 11 October, the Ministry of Railways instituted a new train movement plan, with the number of passenger trains being increased by 64 as compared to 1980. The passenger transport capacity under the new movement plan is capable of reaching an average of 2.6 million to 2.65 million persons per day. The number of cars has been increased on some through express trains from Beijing to various provincial regions, while departures of other trains have been changed from every other day to every day. Throughout the country as a whole, there have been increases in passenger trains and short-haul passenger trains. At the same time, such measures were taken as expanding organization of trains and adding trailer cars in order to expand transport capacity. From the first of the year, the Ministry of Communications got a good grasp on implementing the work of refitting passenger buses, adding about 9,000 passenger buses in 1981. Water transport enterprises under the direct jurisdiction of the Ministry of Communications achieved a net increase of more than 4,000 passenger seats. The civil aviation sector instituted new flights between the United States and China as well as regular air service between such cities as Tianjin, Nanjing and Kunming and Hong Kong and also increased domestic flights. The transport sector also intensified organization work for passenger transport. During the peak seasons of passenger travel, specialized personnel were organized in making careful surveys of schools, factories and enterprises in order to ascertain passenger flow and make rational arrangements for transport, with the railroads increasing the

number of special trains, the water transport sector increasing the number of special boats and the bus sector increasing the number of special buses. During the summer vacation season of 1981, the national railways throughout the nation as a whole ran 1,527 special trains, with a fixed expansion of train organization of 2,276 cars. The state also conducted experiments on such measures as using highways to divide up the volume of short-hall railway passenger transport and increasing the number of ships involved in passenger service along the coast.

With the objective of studying and solving passenger transport problems, the Chinese Transport Economy Research Society held its first academic symposium on the problems of passenger transport in November 1981. The specialists, scholars and practical workers engaged in communications and transport who attended from throughout the nation concluded that plans for resolving passenger transport should be made under the prerequisite of giving consideration to safety, punctuality and economic factors, with every possible measure being taken to increase passenger transport capacity and to meet the demands for passenger transport. At the same time, such proposals were made as strengthening passenger transport capacity by making comparatively great increases in the number of passenger trains, passenger ships and airliners and by expanding or building new passenger stations and passenger docks; greatly strengthening highway passenger transport, fully utilizing water and air transport and promoting comprehensive development of various modes of transport as well as rational division of labor among them; doing a good job of estimating passenger flow, conducting research on trends of development of means of transport and on their renewal and replacement, conducting research on economical distances of transport by various modes of transport and establishing rational transport prices for passenger transport among various modes of transport and the price relations among the various modes of transport; expanding railroad passenger train organization; and making sound passenger transport setup, replenishing the number of passenger transport personnel and raising the level of economic management. These proposals were met with great concern by the relevant sectors.

### 3. Combined transport and containerized and bulk transport

Over the year, there were new developments in regard to combined transport and containerized and bulk transport.

(1) In-depth development of combined transport. In 1981, there were about 50 million tons of goods that fell under the categories of the "Regulations on Joint Transport of Goods by Railways and Water Routes" throughout the nation as a whole. In order to make full utilization of water transport, large amounts of coal were shipped to Shanghai and east China. In 1980, the plan for joint transport of coal by land and water via Yangquan, Qingdao and Shanghai was implemented. Following that, in 1981, a plan was drawn up for joint transport of coal by land and water via Datong, Kailuan, Qimhuangdao and Shanghai. The seven provinces of Jilin, Jiangsu, Liaoning, Shanxi, Anhui, Hunan and Shanxi successively held conferences on combined transport work for the purpose of summarizing and exchanging experiences, strengthening organizational leadership, expanding the scope of activities and further development

of combined transport work. The three provincial cities of Beijing, Tianjin and Anhui and the Nanjing Zhenjiang regions successively established a group of joint transport service companies. Of these, the volume of business of the three joint transport service companies in Chongqing, Changsha and Zhenjiang is comparatively greater. After these joint transport companies were established, they successively developed and expanded their joint transport activities, actively taking on such services for the cargo owners as making consignments for shipment, making transfers, receiving and forwarding. Several joint transport companies also established business connections between provinces, thereby expanding the scope of their activities. In order to meet the demand for development of joint transport work, in November 1981, the State Economic Commission issued the "Provisional Regulations on Combined Transport Work." They were first tried out in Jiangsu Province and other provinces, cities and autonomous districts selected a number of conditional regions for reference trials. After these regulations had been made known to lower levels, serious attention was drawn to them on the part of various provinces, cities and autonomous districts and plans were made to implement them in Jiangsu, Zhejiang, Sichuan, Heilongjiang, Jilin, Hunan, Shandong and Anhui Provinces. The issuing of the regulations and the trials of them should further promote the in-depth development of combined transport work throughout the nation as a whole.

(2) New developments in containerized transport businesses. In 1981, there were 110,000 containers of various types throughout the nation as a whole, an increase of 30 percent as compared to 1980. Throughout the year, the railways carried 2.43 million boxes of containerized goods, with a volume of transport of 2.3 million tons, an increase of 13.3 percent as compared to 1980. The proportion of the volume of transport of goods accounted for by the volume of container transport on the railways increased to 13 percent from 10 percent in 1980. Fifteen thousand boxes of containers, a volume of transport of 38,000 tons, were transported on the domestic water routes, an increase of 68.4 percent as compared to 1980. In 1981, four ocean shipping routes, the Shanghai-Dalien, Shanghai-Qingdao, Shanghai-Yantai and Dalien-Yantai routes, were opened in succession along the north coast. Pilot projects on combined transport of containers by ocean and river were also carried out between Dalien and Nantong. In the sphere of international containers, the Ministry of Communications also started 11 international container shipping routes between China and the United States, China and Japan and China and Australia. The newly built dock solely for container use in the new port of Tianjin has already gone into operation and has a capacity for handling 100,000 boxes a year. In 1 year, the 5 major ports of Shanghai, Tianjin, Qingdao, Huangpu and Dalian handled a total of 101,900 standard international containers, a volume of transport of 646,000 tons, increases, respectively, of 58.5 percent and 63.8 percent as compared to 1980. In 1981, trucks in the communications sectors transported to 38,000 international containers to ports, an increase of 1.8 times as compared to the previous year. In addition to continued use of existing domestic and international air routes, container shipments by civil aviation were also started on the newly opened air route between China and the United States. In 1981, the China Container Company handled 1,203 fixed rental containers and 14,651 boxes on consignment. The capacity of the port of Shanghai for handling international containers has developed very

rapidly. In 1981, 49,500 boxes were completed, of these, 15,100, or 30.5 percent of the total number, were "door-to-door" shipments. The scope of shipments that are handled "door-to-door" has expanded from the Shanghai urban area to the Jiangsu area and Zhejiang. The number of users rose from 50 in 1980 to 278 in 1981. Of these, 238 were in the Shanghai area, 29 were in Jiangsu and 11 were in Zhejiang. The joint container transport route from Jinhua to Wenzhou achieved marked effectiveness in handling combined transport by highway and railway. Throughout the nation as a whole, 70 percent of the railroad container handling stations have started "door-to-door" transport services. In 1981, the railroads realized "door-to-door" service for 31 percent of the containers carried, an increase of 6 percent as compared to 1980.

(3) There was also development of bulk transport. In 1981, the volume of transport of bulk cement was 9.71 million tons, or 11.7 percent of the total amount of cement produced. Of this, 4.3 million tons was cement under centrally controlled state distribution. This was 17.1 percent of the total amount of cement produced for state distribution. The volume of bulk food transport was about 15 percent of the total volume of food transport. The economic effectiveness of bulk cement is quite marked. For the year as a whole, there was a saving of 58,260 tons of packing paper and 318,000 tons of converted wood products. The saving in packing costs was 67.97 million yuan.

#### 4. Research on formulating a technology policy

Technology policy on communications and transport is a guide to determining the direction and operation of technological development in communications and transport enterprises within a fixed historical period. For many years, our nation's communications and transport enterprises lacked a stable technological policy with the result that rational use could not be made of the limited funds and that due economic effectiveness could not be received with them. This affected the development of communications and transport enterprises. During the period in which our national economy is undergoing readjustment, it is an urgent task to intensify research on major technological policies for the communications and transport enterprises and to formulate technological policies in keeping with the state of our nation. In July 1981, the State Science and Technological Commission, the State Economic Commission, the State Planning Commission and the State Capital Construction Commission held a joint planning conference on the topic of research on major technological policies for communications and transport at which they decided on 18 major research topics including overall development of various modes of transport and rational division of labor among them, transport of energy resources, transport of large amounts of bulk goods, container transport, weights of railroad trains, density and speeds of trains, the direction of and steps in the development of railroad pulling force and cars, port construction and the direction of technological reconstruction, fleet makeup and the direction of development of ship power, standards for channel navigation in inland rivers, standards for ranking highways and the direction of development of road surfaces, makeup of motor vehicles, fuel makeup and the direction of development of power, the direction of development of civil



aircraft and the problem of selection of types of aircraft and problems in the spheres of refrigeration, passenger transport, rural communications and transport and urban communication and transport. The scientific and technological forces of the concerned departments were organized in carrying out technological economy demonstrations; conclusions with a scientific basis were advanced which served as a basis for formulating technological policies on communications and transport.

At present, the state has appropriated a special fund to organize the scientific and technological forces of the communications and transport sectors in carrying on research work on the aforementioned research topics. Research on and formulation of these technological policy topics will play a major role in promoting the development of communications and transport enterprises in our nation.

#### 5. Communications construction

In 1981, the state's investment in construction of communications and transport enterprises was 8.3 percent of the total amount of investment in it. This was the lowest proportion of investment for several years. Under conditions of insufficient investment, the communications and transport enterprises set out from actual conditions, and, on the basis of the urgent need for transport, they took technological transformation as the key element in construction. For the year as a whole, 359 kilometers of main railroad track was laid, with through track having been laid on the Anhui-Jiangxi lines and the Handan-Chang line. The 32 kilometer connecting line from Luoman to Liuzhou was completed. With this, the project of laying the main line track on the Zhi-Liu railroad was completed. In 1981, 55.2 percent of the investment in railroad construction was used in reconstruction projects on existing lines. Most of this was used to strengthen routes for transporting coal from Shanxi and to improve transport capacity on trunk lines between major regions. One-hundred sixty-five kilometers of multiple track was laid on the Xuzhou-Zhengzhou segment of the Lanzhou-Haizhou railroad, the Datong-Huhehiao special segment of the Beijing-Bao railroad and on the Shi-De and Jiao-Ji railroads. Construction of the electrification projects on the Shi-Tai line, the Datong-Beijing segment of the Jing-Bao railroad and on the Tianshui-Lanzhou segment of the Lanzhou-Haizhou railroad and of the multiple track electrification project between Beijing and Qinhuangdao are in their initial phases and work is proceeding rapidly on them. Reconstruction of the Beijing, Shenyang and Zhengzhou axes is proceeding with a concentration of forces. The opening of the new and longest railway bridge in our nation over the Yellow River and the Weilizhuang main line on the Jinan axis has increased the daily capacity for freight train passage at Dezhoukou on the Tianjin-Huangpu line by four pairs. The multiple tracks between the four control regions of the Lanzhou-Haizhou line have already been put into operation. This has resulted in an increase in passage capacity at Shangqiu Kou by two pairs of freight trains. For the year as a whole, new locomotives, passenger trains and freight trains were added to the railroads. The shipyards under the direct jurisdiction of the Ministry of Communication fulfilled their assignment of building 310,000 tons of ships for the year as a whole. At the coastal ports, six new berths were built and put into operation, increasing handling capacity by 2.36 million tons. After

the project for partial reconstruction of Dock No 8 at Qinhuangdao was completed, 3 million more tons of coal were transported for the year as a whole. The coal dock at the port of Wuhan was partially reconstructed with the result that 800,000 more tons of coal were transported. More than 13,000 kilometers of highways were surfaced. Of this amount, about 7,000 kilometers were laid with hard surfaces, thereby raising the rank of the highways. At the same time, a number of dangerous bridges were repaired and several broken-off roads were connected up, thereby creating conditions for bringing about the dominant position of motor vehicle transport.

The railroad sectors also rapidly repaired and opened up railroad trunk lines that had been severely damaged by flooding. In the summer of 1981, there was a succession of disasters resulting from torrential rains in Sichuan, Shanxi and Liaoning Provinces, with severe cave-ins and mud and rock slides occurring and interrupting transport on the trunk lines of the Chengdu-Kunming, Baoan-Chengdu, Chengdu-Chongqing, Shenyang-Danzhou and Changchun-Dalian railroads. Several highways were also cut off and traffic on them stopped. The state took a series of effective measures and leading cadres in the concerned departments of the State Council and at the provincial and district levels went on personal inspection tours of these areas, directing rush repairs day and night by tens of thousands of railroad employees and members of the railway corps. The large contingent making the rush repairs on the Baoan-Chengdu railroad, under conditions of continuous wet weather and difficulty in the supply of grain and vegetables, cleared 900,000 cubic meters of earth and rock, erected five temporary railroad bridges, laid more than 50,000 cubic meters of flat rock, and repaired 41 kilometers of electric power contact networks and 58 kilometers of telecommunications facilities, taking only 2 months to restore the entire line to operation. After the Baoji-Tianshui segment of the Lanzhou-Haizhou railroad had been restored to through traffic on 17 September, another mountain cave-in occurred on 29 November, interrupting transport once again. Through traffic was restored ahead of time as the result of a struggle of 13 days and nights by more than 1,000 railroad workers and public project workers.

#### 6. Reform of management systems and enterprises

Over the year, definite progress was made in trial work on reform of communications and transport enterprises. The railroads did a good job of merging the Taiyuan Railroad Bureau and the Beijing Railroad Bureau. Beginning on 1 March, the Datong Railroad Subbureau was incorporated under the jurisdiction of the Beijing Railroad Bureau. The trial plan for division of responsibility between the government and enterprises at the port of Dalian was approved by the State Council. A joint loading and unloading corporation has been established which is separate from the port management bureau. Trial operation will begin in January 1982. Joint management bus companies have been established in Nanchong in Sichuan Province, in Zhaodong in Heilongjiang Province and in Suzhou in Jiangsu Province. The Economics Commission of Tianjin City has drawn up a plan to organize a joint bus transport company for containers. In addition, a great deal of work has also been done in reorganizing and modifying existing rules and regulations governing transport, strengthening market management of transport, making production safe, raising the quality of transport and reorganizing the financial management of enterprises.

## 7. Problems and prospects

In light of the present state of communications and transport subsequent to the continual readjustment in 1981, transport capacity is still far from being capable of satisfying the demands on it of the national economy and the people's livelihood. There are serious deficiencies in the capacities of the main railroad trunk lines, port berths and loading and unloading enterprises. There is a severe shortage of capacity for outshipping of coal in Shanxi, Inner Mongolia, Ningxia and Henan in particular and there is an overall lack of passenger transport capacity. In order to overcome these strikingly weak links in the development of communications and transport as an aspect of the national economy, a continuous effort must be made over a comparatively long time.

(1) The arduous tasks with which communications and transport is faced. In 1982, there will be a great increase in the volume of passenger transport. Our nation's industrial production is making continuous and stable advances in the course of readjustment. To increase the speed we must achieve "assurance of four and striving for five" (i.e., assuring that the total value of industrial production will grow 4 percent as compared to 1981 and striving for growth of 5 percent). This will require that the transport sector delivers raw materials, materials and products on time. In particular, it will require transport of more coal and the assurance that the coal transport plan will be fulfilled and surpassed. At present, there are very pronounced contradictions between production, supply and transport of coal. Shanxi and the northwest are our nation's coal production bases. Local conditions are comparatively good so that it is possible to produce a little more coal. However, because of transport limitations, even if more is produced it cannot be shipped out. At the end of 1981, there were 17 million tons of coal on hand in Shanxi Province awaiting shipment. On the other hand, large quantities of coal are required in regions such as east China and northeast China in which industry is comparatively well developed. Because transport capacity is insufficient, there is a supply shortage.

In order to alleviate the critical situation in coal transport, the communications and transport enterprises must do everything in their power to increase transport capacity, speed up construction and reconstruction of railways and ports for the transport of coal and put particular stress on doing a good job of constructing and reconstructing routes for shipping coal out of Shanxi. They must actively adopt measures for technological organization and increase the capacity for passage through regions in which there are limitations on railroads and through ports. They must make comprehensive utilization of all modes of transport, organize transport on a rational basis and do a good job of combined transport via railroads, water and highways. In particular, they must uphold the policy of planned economy as the central aspect, make balanced shipment of coal according to the plan and accomplish the key point of assurance. They must conscientiously do a good job of the work of transport organization. Balanced daily shipments of coal should be made on the basis of the monthly transport plan to regions in which there are limitations of passage of railways. They must strive to ship coal in large amounts and quickly to support the readjustment and development of the national economy.

(2) The communications and transport enterprises must strive for economic efficiency. Because of heavy tasks and insufficient capacity, communication and transport has been in a critical state for a long time. There has been a tendency to varying degrees in the communication and transport sectors to go after output in terms of passenger-kilometers and ton-kilometers of freight while neglecting effectiveness. In 1981, traffic accidents and damage and loss of cargo was still very serious. Fuel consumption tended to be high, while labor productivity was low so that latent productive capacity was still not manifested. All of these problems must be solved by taking forceful measures. The most essential thing is to correct the guiding ideology of the communications and transport enterprises and to increase economic effectiveness. To increase economic effectiveness in communications and transport, we must transport even more materials and more passengers according to the state plan with as little consumption as possible of labor and materials. This will require that the communication and transport enterprises make an effort to economize on labor consumption and consumption of materials, make an effort to tap latent internal power and increase transport efficiency and strive to take a new course in raising economic efficiency.

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## CHINA'S RAILWAY TRANSPORT

Beijing ZHONGGUO JINGJI NIANJIAN (1982) [ALMANAC OF CHINA'S ECONOMY (1982)]  
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[Article by the General Office of the Ministry of Railways]

[Excerpts] In 1981, the railroad departments throughout the entire nation conscientiously further implemented the plan for readjustment of the national economy under the guidance of the CCP Central Committee and of the State Council and surpassed their production and construction assignments in transport, thereby making new contributions to the stable development of the national economy.

### The Annual Plan for Passenger Transport Was Fulfilled in Advance

There were continual increases in the volume of passenger transport on the railways as the various policies of the party were further implemented, urban and rural country fair trade increased, the outside activities of enterprises increased and travel and home leaves increased. In 1981, the railways of the nation as a whole transported 942 million passengers, or 108.3 percent of the annual plan. This was 30 million more people than in 1980, which had been the peak year in history, and represented an increase of 3.3 percent. There were three peaks of passenger transport during the year: in January and February, which is the period of Spring Festival travel, with a daily average of 2.88 million persons being transported and with over 10 million more people being transported than for the same period in 1980; in April and May, which is the peak period for spring travel and urban and rural country fair trade, with over 13 million more people being transported than in the same period in 1980; and in July and August, which is when schools are on summer vacation, when factories and enterprises organize holidays for their staff and workers and when there is an increase in convalescence, with over 7 million more people being transported than in the same period in 1980. Among the passengers carried, the amplitude of increase in the number of through long-distance passengers was greater than that of increase in the number of intratubal and suburban short-distance passengers, the number of through long-distance passengers transported by all routes in 1981 having increased 6.1 percent as compared to 1980, whereas the number of intratubal and suburban short-distance passengers increased 2.9 percent. There was a net increase of 918 passenger trains for the year as a whole. However, because of the great increase in the volume of passenger transport, the output per passenger train amounted to 8.61 million

passenger-kilometers, the highest level in history and an increase of 1 percent as compared to 1980. The number of passenger cars and the number of hard and soft sleepers per 10,000 passengers were 0.18 and 0.15, respectively, figures basically the same as for 1980.

In 1981, the volume of freight transport on China's railways was 1,048,000,000 tons, or 107 percent of the annual plan, with 68 million more tons of materials being shipped than according to the plan. Twenty railway bureaus throughout the nation exceeded their plans. As readjustment of the national economy proceeded further, new changes began to occur in the economic makeup of our nation and corresponding changes also occurred in the makeup of the volume of railroad freight transport. Coal remained the key material of railroad transport, with the proportion of the total volume of transport accounted for by it increasing from 38.2 percent in 1980 to 39.3 percent. There were comparatively large decreases in transport of such staple materials as smelted materials and ore and building materials serving heavy industrial production and capital construction with the result that the volume of freight transport decreased 37.5 million tons as compared to 1980, a decrease of 3.5 percent. On the other hand, there was a dispersion of transport points and there were large numbers of lots, with comparatively great increases in shipments of materials supporting agriculture, light textile and industrial products for everyday use for which there was high demand.

Transport of various major materials was accomplished comparatively well, with the plans having been exceeded in all cases. The volume of coal transport amounted to 412 million tons, an amount exceeding the plan by 5.6 percent and close to the level in 1980. At the same time that on-time transport of coal that had been produced was assured, large amounts of reserve coal were also shipped out. In Shanxi Province, in which there is abundant coal production, the volume of coal transport for the year as a whole amounted to over 100 million tons, close to one-fourth the volume of railroad coal transport and the largest amount transported historically in one year. There were increases in coal shipped via Shanhaiguan and the Dezhou boundary via the Tianjin-Huangpu railroad and to east China via Shangqiukou on the Gansu-Haizhou railroad. Through joint efforts on all routes, the state of transport of several materials that had been in stock for long periods was comparatively good, with alleviation having occurred in states of overstocking. Two-hundred thousand more tons of Yunnan phosphate ore were shipped than according to the plan and than in 1980. The reserves of phosphate ore in Guizhou decreased from 400,000 to 80,000 tons. Reserve lumber in Fujian decreased from 400,000 tons to 150,000 tons, a decrease to a rational level of reserve. In order to disperse transport of materials in ports and solve the problem of pressure on ships and pressure on freight, various railroad units further strengthened their cooperation with various ports, allocating cars to the ports to load materials when necessary. They also left more than 1,600 cars at the major ports for reserve use, assuring that there would be a great turn for the better in the states of demand and overstocking. (see Tables 1 and 2)

Table 1. State of Completion of Major Railroad Transport Indices for 1981

<u>Item</u>	<u>Unit</u>	<u>Planned</u>	<u>Completed</u>	<u>Percent of plan</u>	<u>Percent of 1980</u>
Number of passengers transported	(a)	87,000	94,239	108.3	103.3
Passenger turnover volume	(b)	1,260	1,470	116.7	106.5
Volume of freight transported	(c)	98,000	104,836	107.0	96.5
Freight turnover volume	(d)	5,100	5,701	111.8	99.9
Number of cars loaded daily	cars	56,000	58,620	104.7	95.6
Freight train dead carrying capacity	tons	47.6	48.6	102.1	101.3
Freight train turnaround time	days	3.23	3.21	100.6	94.1
Kilometers per freight locomotive per day	km	409	411	100.5	99.0
On-time departure rate of passenger trains	percent		99.1		
On-time travel rate of passenger trains	Percent		93.6		
On-time departure rate of freight trains	percent		92.5		
On-time travel rate of freight trains	percent		90.5		

## Key:

- (a) 10,000's of persons
- (b) 100 million passenger-kilometers
- (c) 10,000's of tons
- (d) 100 million ton-kilometers

Table 2. State of Completion of Transport of Major Materials by Railways in 1981

Unit: 10,000's of tons

<u>Item</u>	<u>Annual plan</u>	<u>Completed</u>	<u>Percent of plan</u>	<u>Percent of 1980</u>
Total volume of freight transported by railways	98,000	104,836	107.0	96.5
Of the above:				
Volume of coal transported	39,000	41,199	105.6	99.3
Smelted materials	16,800	17,942	106.8	92.7
Petroleum	4,800	4,978	103.7	89.5
Mine construction materials	11,500	13,948	121.3	88.0
Cement	2,400	2,425	101.1	102.6
Lumber	3,900	4,033	103.4	95.1
Chemical fertilizers and pesticides	2,100	2,454	116.9	110.9
Foods	3,250	3,428	105.5	108.9
Cotton	150	182	121.3	111.7
Phosphate ore	900	1,053	117.0	107.1

In July and August of 1981, flooding such as seldom seen in history occurred in Sichuan and Shanxi, with severe water damage occurring on the Chengdu-Kunming, Chengdu-Chongqing, Yangzhou-Anhui, Baoan-Chengdu and Gansu-Haizhou railroads. Transport was interrupted for over 1 month between Baoji and Tianshui on the Lanzhou-Haizhou line and there was an interruption of 2 months on the Baoan-Chengdu line. In order to assure that rush repairs were made in a timely way and in order to support the urgent needs in the agricultural regions, railroads throughout the nation gave priority to loading and shipping of materials for dealing with the emergency and for disaster relief and to getting a grasp of key matters. During the period in which transport was interrupted, roundabout transport of some passengers and freight was organized via the Jiao-Zhi, Xiang-Chongqing, Yangzhou-Anhui and Bao-Lan lines. According to incomplete statistics, in the 2-month period from mid-July to mid-September, more than 3,600 cars of emergency materials were shipped and more than 17,300 cars of such emergency aid materials as foods and medicines were shipped to the Sichuan and southern Shanxi regions. This effectively supported the struggle of the people in the disaster areas in combatting



floods and dealing with emergencies and assured that the people in the disaster areas had food to eat and clothes to wear and that those who were sick could obtain timely treatment.

Although the volume of railroad transport in 1981 was lower than that in 1980, there was an increase in passenger transport volume and passengers and freight were transported over longer distances. When the actual volume of work of railroad transport is converted to volume of turnover, the figure for the year was 717.1 billion ton-kilometers, an amount exceeding the plan by 12.7 percent. This was an increase of 8.3 billion ton-kilometers over 1980, which had been the peak year in history.

In 1981, there were pronounced contradictions between transport capacity and volume of transport in many sectors of all routes. In order to do a good job of railroad transport work, the railroad transport departments exerted a maximum effort and took the following measures.

(1) They readjusted and worked out the train shipping plan. In 1981, there were 12 successive local readjustments of train shipping plans. At the same time, there was an overall readjustment and reorganization of railroad train shipping plans throughout the entire nation. These plans were put into effect on 1 October. This had a positive effect in relieving the critical situation in transport and in completing passenger and freight transport assignments more satisfactorily. In the new train shipping plan, there were 906 passenger trains, an increase of 128 over the number in the shipping plan drawn up in 1978. In the new plan, there were 22 special express trains, 78 through-service passenger express trains and 74 intratubal express trains. There were overall increases in the number of major passenger stations and of passenger trains on the major lines. These were the largest increases in passenger trains in the series of plans that have been drawn up in the past. By this means, it will be possible to meet the demand for transport of 2.6 million to 2.65 million passengers a day. In the new plan, there are in all 8,872 freight trains and there has been an increase of 18 freight trains at the border stations between the 44 bureaus of the railroads throughout the nation. At the same time, there were improvements in various technological standards and indices.

(2) They tapped the potential of old lines, utilized branching of new lines and expanded the passage capacity of the major trunk lines. On the basis of thorough investigation and study and full mobilization of the masses and through strengthening transport organization work, the potentials of old lines were tapped so that there were increases as compared to 1980 in the number of freight trains passing through such boundary points as Shanhaiguan, Dezhou, Shangqiu, Gaoying and Dalong. After the new lines took on some of the responsibility for transport, the critical conditions on several trunk lines were eased.

(3) They strengthened maintenance and repair of transport equipment and there were further improvements in the quality of transport equipment. Transport departments at all levels generally strengthened basic work and concentrated on maintenance and repair of locomotives, railroad cars, lines,

communications and signals. This resulted in further improvements in the quality of transport equipment and in assurance of normal operation of transport. In 1981, plans were exceeded for periodic overhauls, frame maintenance and washing of steam, internal combustion and electric locomotives, with a marked improvement being brought about in the quality of the locomotives. At the time of the fall inspection of the steam locomotives, 95.5 percent were evaluated as being in superior or good condition. There was a decrease of over 6 percent as compared to 1980 in the average number of locomotive breakdowns per 100,000 kilometers and there were decreases of 25.5 percent and 18.3 percent, respectively, in the average number of temporary repairs of electric and internal combustion locomotives per 100,000 kilometers as compared to 1980. Periodic repairs, supplementary repairs and axle inspections of passenger trains and freight trains were all completed comparatively well. At the time of the fall inspection, 97.2 percent of the 9,884 passenger cars in service met second quality and grade standards, a further increase over what was found in 1980. There was a marked turn for the better in freight train quality. The number of accidents attributable to the quality of passenger and freight trains decreased by 5 percent and 27.5 percent, respectively, as compared to 1980. In 1981, track was replaced and overhaul was performed on 2,678 kilometers of line, with the plan having been exceeded. This was a year of the most accomplishments in history. Repairs were completed on 3,035 kilometers of line, or 101 percent of the annual plan. During the year, 884 kilometers of seamless track was also laid. In addition, 3.41 million concrete ties were laid, 79,000 concrete slab sleepers were laid, 7,453 kilometers of roadbed was sifted, 1.92 million broken pieces of road were replaced, more than 61,000 steel track connectors were repaired and 143,000 pieces of single axis track that had been damaged by wear and tear were replaced, thereby further improving the quality of the lines and bridges. In order to assure traffic safety and improve transport efficiency, locomotive signals and automatic warning equipment were installed on the Zhejiang-Jiangxi and Shanghai-Hangzhou lines. During the year, 1,200 locomotive signals were installed on all lines and more than 800 train stations were built. At the same time, replacement and repair of communications and signal equipment was promoted, the repair system was concentrated and there were decreases in the frequency and duration of blocked lines and in interference due to passing trains.

(4) They actively rushed to repair water damage and to lessen its effects on transport to a maximum extent. In 1981, the railroads throughout the nation suffered water damage unprecedented in history that had great effects on railroad transport. Throughout the year, there were 120 successive occurrences of disasters involving torrential rain, torrents of water rushing down mountains, cave-ins and falling rock or mud and rock slides, with transport being interrupted on more than 20 trunk and branch lines. This was an increase of 5,110 hours as compared to 1980. The most seriously affected were nine trunk lines of the Baoan-Chengdu, Lanzhou-Haizhou, Yangzhou-Anhui, Chengdu-Kunming, Changan-Dalian, Lanzhou-Xinjiang, Sui-Jia and Mu-Tu routes on which traffic was interrupted for dozens of hours. The longest period was 56 days. After the water damage occurred, the railroad departments at once organized their personnel in carrying out emergency repairs. They received energetic support

from local governments and garrison troops. Through the joint efforts of the vast group of emergency repair personnel, the emergency repair work was continuously speeded up and the interrupted lines were opened to traffic in advance of the plan. This contributed to exceeding the annual transport plan and to supporting local flood prevention and disaster relief work and to industrial and agricultural production.

(5) They cooperated closely with military transport departments and made reforms in the time and modes of transport of military recruits and veterans. In the past, transport each year of recruits entering the service and of veterans who were being demobilized occurred during the busy period when the railroads were transporting passengers during the Spring Festival. This further aggravated the critical state of railroad passenger transport. In order to change this state of affairs, repeated study and consultation were carried out with the military departments and in 1981 reforms were made in regard to the transport of recruits and veterans so that the assignments were completed comparatively well.

#### Comparatively Good Accomplishments Were Also Made in the Railroad Industry and Capital Construction

In 1981, 67 plants under the jurisdiction of the Ministry of Railways achieved a total value of production of 20.3 billion yuan, or 116.2 percent of the annual plan, and completed the annual plan 2 months ahead of time. However, because of the economic reorganization that was being carried out, the production assignments for the individual plants were generally insufficient and the total value of production was 1.1 billion yuan less than in 1980, a decrease of 5.2 percent. The plan for building or repair of 9 locomotive and car products was completely fulfilled. Of these, repair of internal combustion locomotives and construction of new passenger trains exceeded 1980 (see Table 3). Plans were also completed for other industrial products for railroad use.

In 1981, railroad plants strengthened business management, put systems of economic responsibility into practice, developed comprehensive quality control and used new techniques and new technology to raise the quality of their products. The ratio of first quality products in manufacture of new internal combustion, electric and steam locomotives and passenger cars and in repair of locomotives and passenger cars was 7 percent to 48 percent as compared to 1980. The ratio of poor work that had to be done over in construction of new internal combustion locomotives, passenger cars and freight cars and in repair of locomotives and passenger cars decreased from 1.21 percent to 39.35 percent as compared to 1980.

After the plants had completed their state plans, in order to make full utilization of their equipment and personnel, they engaged in investigation and research, broadening their ways of production and contracting to do tasks assigned from outside, with comparatively good results being obtained. Many plants also undertook to produce export products. In 1981, locomotive and car plants concluded 11 contracts in which the amount contracted for was \$14.4 million. In this way, they accumulated experiences and established a good foundation for expanding international trade in the future.

Table 3. Status of Completion of Locomotive and Car Repair and Manufacture

<u>Item</u>	<u>Unit</u>	<u>Planned</u>	<u>Completed</u>	<u>Percent of plan</u>	<u>Percent of 1980</u>
Repairs in plants					
Steam locomotives	Lc	2,800	2,923	104.4	99.2
Internal combustion locomotives	Lc	330	352	106.7	121.4
Passenger cars	Cars	2,283	2,299	100.7	94.8
Freight cars	Cars	40,551	41,565	102.5	96.8
Crane cars	Cars	290	326	112.4	93.8
Newly manufactured					
Steam locomotives	Lc	270	276	102.2	88.7
Internal combustion locomotives	Lc	90	102	113.3	78.5
Electric locomotives	Lc	20	20	100.0	50.0
Passenger cars	Cars	1,152	1,159	100.6	115.7
Freight cars	Cars	8,301	8,779	105.8	83.0
Crane cars	Cars		3		5.3

Key: Lc.= Locomotives

In the readjustment of the national economy, investment in railroads decreased and there were not enough assignments for the large number of the working corps. The capital construction departments of the railways were determined to carry out the relevant state provisions and requirements. On one hand, they concentrated on key projects, assuring that they would go into production on time, and speeding up the rate of progress of work. On the other hand, they got a firm hand on doing good aftertreatment and maintenance on projects that had been discontinued or slowed down, diminishing the loss to the state to the greatest extent possible. In 1981, the key element in railway capital construction still lay in technological transformation of the railroads and solving the problems of shipping coal out of Shanxi and of transport capacity for passage through coastal ports and the southwestern and northwestern regions. The anticipated plans and goals for the 15 key construction projects assigned by the ministry were basically completed. Of these, 30.9 kilometers and 37 kilometers of multiple track were put into use on the Jiao-Ji line and the eastern segment of the Lanzhou-Haizhou line, respectively increasing transport capacity to some extent. The assignments of laying new track on the Handan-Changchun line, the Anhui-Jiangxi line and from Luoman to Liuzhou on the Zhi-Liu line. The project for organizing stations at Weilizhuang on the Jinan axis was basically completed. In 1981, work continued on the multiple track on the Shijiazhuang-Dezhou line, on the multiple track between Zhengzhou and Xuzhou on the Lanzhou-Haizhou line, between Tianshui and Lanzhou on the Lanzhou-Haizhou line, between Yangquan and Taiyuan on the Shijiazhuang-Taiyuan line, the Beijing-Baoan line and the Beijing and Zhengzhou axes, with

varying degrees of progress having been made. Preparations were made for work on the Beijing-Qinhuangdao line and the Yan-Shi line, which are to be built for coal transport. Temporary housing has been constructed and work corps have gone to work so that a good overall foundation has been laid for 1982. Some work was begun on the multiple track between Hengyang and Guangzhou on the Beijing-Guangzhou line.

#### Volume of Work Completed in Kind in 1981

Cubic meters of roadbed earth and stone	7.83 million cubic meters
Tunnels	5,995 meters
Large and medium-sized bridges	5,669 meters
Track laid on main lines	359.8 kilometers
Track laid on station lines	254.5 kilometers
Regular building built (area completed)	1,700,302 square meters

#### Status of Completion of 1981 Railway Capital Construction Plans

<u>Item</u>	<u>Unit</u>	<u>Annual Plan</u>	<u>Completed</u>	<u>Percent of annual plan</u>
Total investment	*	117,650	125,331	106.5
Of which:				
Railroad management	*	63,218	68,501	108.4
New railroad construction	*	30,576	33,172	108.5
Industrial construction	*	8,448	9,248	109.5

\* 10,000's of yuan

In 1981, there were further decreases in coal and oil consumption by railroad locomotives. Steam locomotives consumed 104.9 kg of coal per each 10,000 kilometers, a decrease of 11.6 kg as compared to the plan. This resulted in a total savings of 1,965,000 tons of natural coal. By comparison to 1980, there was a decrease in coal consumption of 1.5 kg per 10,000 kilometers.

There were savings on coal on 133 of the 134 segments of all routes on which steam locomotives served, with savings on coal being achieved by 5,236 (more than 80 percent) of the steam locomotives. The internal combustion locomotives consumed 34.1 kg of oil per 10,000 kilometers, a decrease of 4.9 kg as compared to the annual plan. During the year, there were savings of 105,000 tons of oil on all routes. As compared to 1980, there was a decrease in oil consumption of 0.9 kg per 10,000 kilometers. Savings on oil were achieved on the 40 segments of the total routes on which internal combustion locomotives were in service, with savings on oil being made by 1,697 locomotives, or more than 91 percent of the total number. Electric locomotives consumed 122.1 kilowatt-hours of electricity per 10,000 kilometers, a decrease of 11.5 percent as compared to the plan and a decrease of 5.9 percent as compared to 1980. On all routes there was a saving on electricity of 49.22 million kilowatt hours of electricity.

In 1981, transport was interrupted on many trunk lines as the result of severe calamities. This resulted in increases in expenditures and decrease in income. All routes strengthened financial management, doing everything possible to plug leaks and preserve income, economizing on expenditures and striving to make up for losses. As a result, their financial conditions are still good. Income from transport for the year as a whole was 13.11 billion yuan, or 103.8 percent of the annual plan and an increase as compared to 1980. Expenditures for transport were 6,954,000,000 yuan, or 99.7 percent of the annual plan. Taxes paid to the higher authorities amounted to 1,788,000,000 yuan and profits turned over to the higher authorities amounted to 1,901,000,000 yuan.

#### Synopsis of New Railroad Construction in Our Nation

Beijing-Qinhuangdao line. The Beijing-Qinhuangdao line begins at the Shuangquai organizing station in the Beijing Railroad axis and runs east to Qinhuangdao station on the Beijing-Shanhaiguan line, a total length of 275 kilometers. Two lines have been added to the west of Langwopu station along the present Tongtuo railroad and a new double track was laid to the east of Langwopu. Electric locomotives are used for hauling along the entire line.

This line is situated on the northern border of the north China plane and at the southern foot of the Yanjing Range, passing through Tong County, Sanhe County, Ji County, Yutian County, Fengrun County, the new city district of Tangshan City, Qianan County, Lulong County and Ning County. The regions through which it passes have sparse populations, abundant resources and comparatively well-developed economies.

In the west, the Beijing-Qinhuangdao line connects with the Jing-Bao and Bao-Lan lines, forming a new route for increasing transport of coal from Ningxia and Inner Mongolia and the Datong and Yanbei regions of Shanxi to the port of Qinhuangdao and to the northeast region. This not only eases the pressure on transport on the existing Beijing-Shanhaiguan line and increases flexibility of transport but also shortens the distance of freight transport from Beijing to Shanhaiguan by 70 kilometers, while the distance of passenger transport is shortened by 110 kilometers.

Construction of this line was started in 1980 and work is now actively in progress.

Yanzhou-Shijiusuo line. The Yanzhou-Shijiusuo line starts in the west at the Chengzhongzhuang station of the Tianjin-Huangpu railroad in the Yanzhou region and runs toward Dongyanshen passing through Qufu County, Sishui County, Pingyi County, Fei County, Linyi, Junan County and Rizhao County within the borders of Shandong Province and ending at the port of Shijiusuo, a total distance of 310 kilometers.

Yanzhou, at the western link of this line, is a coal industry base and Shijiusuo at the eastern end is a deep water port. After the entire line is built, it will take on the task of transporting coal coming from Shanxi, Yanzhou and Zaozhuang to the east China region. It will be an additional new route for our nation's foreign trade. The population along the line is

sparse, there are abundant resources and conditions for secondary agricultural production are good. The construction of this line will be of great significance for the development of this region.

Work on the Yanzhou-Shijiusuo line was begun in 1981.

Zhicheng-Liuzhou line. The Zhicheng-Liuzhou line starts in the north at Zhicheng and runs south via Shimen, Cili, Dayong, Guzhang, Jishou and Linyang in Hunan Province to Huaihua, where it intersects with the Hunan-Guizhou railroad. To the south of Huaihua, the line passes through Qiancheng, Huitong and Jing County and then enters the Zhuang Autonomous Region of Guangxi, after which it passes through Sanjiang, Rongan and Rongshui, linking up with the Guizhou-Guangxi line at Luoman Station. It then follows the Lian-Luo line to Liuzhou. The total length of the line is 886 kilometers. Over the course of the route there are 342 large- and medium-sized bridges having a total length of 41 kilometers. There are 378 tunnels with a total length of 170 kilometers.

The northern end of this line joins with the Jiao-Zhi line and also links up with the Tai-Jiao and Tong-Pu lines. It is a part of the great north-south trunk line that links north, central and south China and runs parallel to the Beijing-Guangzhou line, passing through Shanxi, western Henan, western Hubei, western Hunan and northern Guangxi. The line passes through 14 provincial cities. Along the route, there are large reserves of grain and such secondary agricultural products as cotton, oils and tobacco leaves as well as such mineral resources as coal, iron and phosphate ore as well as lumber. For this reason, the building of this line will be of great significance in sharing the burden of transport on the Beijing-Guangzhou railroad and in developing the economy of the interior.

Work was started on this line in 1970. By 1979, track had been laid from Zhicheng to Luoman and provisional service had begun. Laying of track on the connecting line from Luoman to Zhiliu was completed on 26 December 1981. The entire line will soon be officially open to service.

Anhui-Jiangxi line. The Anhui-Jiangxi line has a total length of 551 kilometers. It starts in the north at Wuhu City in Anhui Province and passes through the southern Anhui region to enter Jiangxi Province, running via Jingdezhen and Leping to Guiqi where it connects with the Zhejiang-Jiangxi line. Work was begun on this line in 1966 and the segment from Guiqi to Jingdezhen went into official use in 1980. Laying of track was finished on 4 December 1981 and wind-up work is now actively in progress.

In the north, the Anhui-Jiangxi line connects with the Nanjing-Wuhu and Huai-Nan lines and with the Yangtze. In the south, it connects with the Zhejiang-Jiangxi and the Ying-Xia lines. The transport mileage from Nanjing to Yingtian via this line is about 300 kilometers shorter than via the round-about route through Shanghai and Hangzhou. This is of very great significance in reducing the pressure of transport on the Shanghai-Nanjing and Shanghai-Hangzhou trunk lines as well as in lowering transport costs.

The Tunqi region through which the Anhui-Jiangxi line passes is the political, economic and cultural center of southern Anhui. Jingdezhen City is an important city of northeastern Jiangxi and is also a famous world "porcelain city." Along the course of this line there are abundant amounts of bamboo, wood and tea and various other types of economic crops. After this railway has been completed, it will vigorously stimulate the development of industrial and agricultural production in that region.

Handan-Changzhi line. The Handan-Changzhi line starts at Handan East Station on the Beijing-Guangzhou line and passes via Cishan, She County and Licheng, connecting with the Taiyuan-Jiao line at Changzhi North Station. It is 218 kilometers in total length. The 108 kilometer portion from She County to Changzhi is a newly constructed portion and the 110 kilometer portion from She County to Handan is a rebuilt existing line. Work was started on this line in 1970. Laying of track for the entire line was completed on 25 November 1981. At present, wind-up work is in progress and it will soon be put into operation.

The region through which the Handan-Changzhi line passes produces large amounts of grain and cotton and also has very abundant underground resources. It has particularly great coal, iron ore and lime reserves. Building of this line will provide the conditions for exploiting these resources. In addition, after the Handan-Changzhi line is completed, it will be linked with the Taiyuan-Jiao line and the Beijing-Guangzhou line. This opens up a new route for out-shipment of Shanxi coal.

Qinghai-Xizang line. The Qinghai-Xizang line starts in Xining city in Qinghai Province and runs to Lhasa in the Xizang Autonomous Region. It is one of the major trunk lines among the railroads in the western part of our nation. It is of very great strategic significance for strengthening the connections between the western frontier region and the interior of our nation and for developing the economy of the frontier region.

The Qinghai-Xizang line starts in Xining City and follows along the northern bank of Lake Qinghai and then crosses the Qilain Mountains, passing via Xili-gou and Delingha to Golmo. Following that, it goes over the Kunlun Mountains and the Tanghla Mountains. It then passes through Naqu and goes along the Lhasa River to Lhasa. The entire line is over 2,600 meters above sea level and there is a 900 kilometer portion of it that is 4,000 to 5,000 meters above sea level. There are differing climatic conditions along the line and there are also very great differences in atmospheric temperature. There are also especially unfavorable geological conditions including salt lakes and ground that has been frozen for many years so that the project was arduous.

This line has a total length of 1,968 kilometers. Of this, the 177 kilometer segment from Xining to Haergai went officially into operation in 1975. Work was begun on the 654 kilometer segment from Haergai to Golmo in 1974 and laying track was completed in 1979.

Southern Xinjiang line (Turfan-Kuerhlo segment). The Southern Xinjiang line (Turfan-Kuerhlo segment) starts at the Turfan East Station on the Lanzhou-



Xinjiang line and runs to Kuerhlo through the three counties of Tuokesun, Hejing and Yanqi. Its total length is 476 kilometers. Work was started on this line in 1974 and laying of track was completed in 1979.

The Southern Xinjiang line (Turfan-Kuerhlo segment) lies within the Xinjiang Uygur Autonomous Region. Along the route, there are such resources as coal and iron ore. The route also passes through agricultural regions and grazing regions. The construction of this line is of very great significance in stimulating the development of politics, culture, industry, agriculture and animal husbandry in the southern Xinjiang region.

Sanshui-Maoming line. The Sanshui-Maoming line is situated in the southwestern part of Guangdong Province. It starts in the east at Sanshui Station on the Guangzhou-Sanshui line and runs to Maoming City passing through the counties of Zhaoqing, Xinxing and Yangchun. Its total length is 323 kilometers. Work was begun in 1978 on two particularly large bridges over the Xi Jiang and the Bei Jiang within the 94 kilometer segment from Sanshui to Yaogu.

After the Sanshui-Maoming line is built, it will be possible to connect the Beijing-Guangzhou, Guangzhou-Shen and Li-Zhan lines and the railways in the southwestern region. It will also link up with traffic shortcuts in Guangdong, Guangxi and the southwestern region. This will make it convenient to ship out sulfur and iron deposits and petroleum of this region and to develop the local economies.

Fuyang-Huainan line. The Fuyang-Huainan line lies within the borders of Anhui Province. It starts at Fuyang and runs to Huainan City after passing through Jiangkouji, Xieqiao, Fengtai and Panji, a total of 126 kilometers.

The region through which this line passes has abundant coal resources. Completion of this railroad will have an important effect on developing the economy of the region, developing the Panxie coalfield and dividing up the volume of transport on the Tianjin-Huangpu line.

Work on this line was started in 1976.

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## CHINA'S HIGHWAY TRANSPORT

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[Article by Jiao Lu [3452 6424]]

[Text] In 1981, there were new advances in transport production and construction in the area of China's highway traffic.

### 1. Highway transport

In 1981, the highway transport departments had the highest level of passenger transport volume and turnover volume in history, with increases as compared to 1980 of 17.5 percent and 15.1 percent, respectively. The volume of freight transport also exceeded the state plan. For details see Table 1.

Table 1. Status of Completion of Principal Highway Transport Indices of 1981

<u>Item</u>	<u>Unit</u>	<u>Actual amount completed</u>
Vehicular passenger transport volume	10,000's of persons	261,013
Vehicular passenger turnover volume	100 million person-kilometers	839
Freight transport volume by highway departments	10,000's of tons	71,504
Of the above, vehicular freight transport volume	10,000's of tons	53,263
Freight turnover volume by highway departments	100 million ton-kilometers	253
Of the above, vehicular freight turnover volume	100 million ton-kilometers	244

In 1981, there were continual increases in the quantity of trucks owned by various industries, even more social motive power entered the transport market and industrial structure was further reorganized, with a contraction occurring in investment in capital construction. There was a great decrease in ore and building materials, which for many years have accounted for 40 percent to 50 percent of the volume of freight transported by highway. Under these conditions, the highway transport departments throughout the nation as a whole did everything possible to open up new routes of production, strove to improve their attitude of service, raised the quality of transport and assured the completion of their transport assignments.

There were also new advances in highway container transport. In 1981, the Ministry of Communications continued to give special attention to combined water and land transport of containers between Shanghai and the three northeastern provinces and to trials of door-to-door highway transport of containers in the five provinces of Shandong, Jiangsu, Anhui, Zhejiang and Heilongjiang, with comparatively good results having been obtained. In the first half of 1981 alone, the highway transport departments completed a transport assignment of 110,000 boxes.

In 1981, there was an increase of 22 percent as compared to 1980 in passenger vehicle ownership and there was a turn for the better in the state of crowding in passenger transport. In order to make it more convenient for peasants to ride, there were increases in the frequency of bus service to rural areas on the part of highway passenger transport as well as increases in lines, stops and regular bus service with overnight stops in rural areas. Regular bus service to rural areas in Jiangsu Province accounted for more than 70 percent of the total runs of passenger transport in the province as a whole. Of these, 25 percent stopped over in rural villages at night. The number of station stops was also increased. At present, there is one station at an average of each two kilometers and the peasants are extremely satisfied.

## 2. Construction and maintenance of highways

On the basis of the requirements for expansion of the national economy, the traffic departments proposed on the basis of a summarization of their experiences a highway construction program of "a comprehensive program for strengthening maintenance, being active in making improvements, development of key points, scientific management and assurance of unimpeded transport." They undertook active development of the economy, investigated the state of the highways and volume of traffic, strengthened feasible research and management work in capital construction and gave thorough attention to economic effectiveness, with new accomplishments having been made in highway construction and maintenance. During the year, more than 9,000 kilometers of new highway was built through the nation as a whole. These included national main highways, highways in frontier regions and county and commune highways and tourist highways in mountainous regions. Key projects for constructing and opening main highways to traffic included the highway from Yichuan to Lanzhou, a total length of 949.8 kilometers. This highway crosses the three provinces or regions of Shanxi, Gansu and Ningxia and meets third-class technical standards. It is paved to a width of 6.6 meters with asphalt and has a residual

oil surface. The bridges and culverts over the entire route are permanent structures and protection projects and safety facilities are comparatively complete. As the result of checking and appraisal on a national basis, it was found that designs are rational, highway configurations make for smooth passage and the quality of engineering is good. After these highways were opened to traffic, they were of great significance in improving the highway distribution in the large northwestern region of our nation and in developing the economies along the highways. In addition, work was also begun in 1981 on the Qinghai-Xinjiang highway which will be over 2,000 kilometers in length.

In order to develop frontier and mountainous regions, and enliven the rural economy and to change the inconvenient backwards state of communications in several regions, the masses were mobilized in various regions and the mode of operation of having things run by the people with subsidization by the government was adopted to build many county and commune highways. Of these, there were particularly outstanding achievements in Sichuan, Zhejiang, Yunnan, Anhui and Nei Monggol, with more than 700 kilometers of new highways being opened to traffic during the course of the year. In 1981, several new highways were also built to scenic spots and historical sites and to major scenic areas. For example, a highway was built to Shaolin Temple on Song Mountain in Henan and a new highway was built to Badaling via Shisanling at Changping. These highways have been of great significance in expanding our nation's tourist industry.

The lack of bridges on our nation's highways has been comparatively severe. There are some highway segments that are often impassable during the flooding season or on which traffic can only be maintained by means of ferries. For the past several years, the highway traffic departments have given serious attention to bridge construction. In 1981, 3,641 new highway bridges were built throughout the nation as a whole. They have a total length of more than 110,000 meters. Some of these, such as the large over-ocean bridge from Liaoning to Changxing Island, the Dong River bridge at Huiyang in Guangdong and the large Sanjiang highway bridge at Gezhouba, were comparatively large scale and technologically complicated projects. They are over 2,000 meters in total length. The 220 meter arched bridge on the Jinan-Yellow River Highway was also victoriously completed during the year.

In order to meet the requirements of continuous growth in traffic volume, various provinces, cities and autonomous regions engaged in planned technological reconstruction of existing highways, with other 20,000 kilometers of old highway having been reconstructed during the year. Of this amount, over 7,000 kilometers of highway was repaved with asphalt and given a residual oil surface, while over 130,000 kilometers were paved with sand and rock. This resulted in the ratio of paved highways throughout the nation reaching 75 percent and a great improvement in traffic conditions. Comparatively great accomplishments were also made in technological reconstruction of highways in Liaoning, Shandong, Hebei and Gansu Provinces. By the end of 1981, more than 1,200 kilometers of reconstruction had been completed and an asphalt surface had been laid on the Qinghai-Xinjiang Highway, in the reconstruction of which the state has made a key investment.

### 3. Highway industry

The highway industry underwent readjustment and its condition has been continually improving. At present, a vehicle repair network with an annual repair capacity of up to 100,000 vehicles has basically been formed and capacity for producing long-distance passenger buses, vehicle trailers, small road-building and road-maintenance machines, machines and tools for vehicle repair, loading and unloading equipment and fittings was strengthened. The major products that were actually completed in 1981 were more than 8,000 long-distance passenger buses and more than 9,000 vehicle trailers, the total value of production completed amounting to over 1.4 billion yuan.

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## CHINA'S WATER TRANSPORT

Beijing ZHONGGUO JINGJI NIANJIAN (1982) [ALMANAC OF CHINA'S ECONOMY (1982)]  
in Chinese 1982 pp V 237-V 239

[Article by Jiao Shui [3542 3055]]

[Excerpts] In 1981, China's communications departments conscientiously implemented the lines, guidelines and policies in force since the Third Plenum and carried out enterprise consolidation, and the communications and transport production and construction achieved rather good results. At a planning conference of the enterprises directly subordinate to the Ministry of Communications held at the end of 1981, the Ministry of Communications proposed 10 tasks for the vigorous development of China's water transport. Implementation of these tasks will give our water transport a greater role in the four modernizations.

China's water transport includes overseas transport, coastal and riverine transport, harbor and navigation route construction, the water transport industry, rescue, salvage and towing, and the like. Overseas transport is treated in a separate article and will not be discussed here.

### 1. Coastal and Riverine Transport

In 1981, the nation's coastal and riverine passenger and goods transport overfulfilled their state plan assignments and assured the transport of coal, petroleum, wood, grain, foreign trade commodities and the like. The details are presented in the following tables.

Table 1. Coastal and Riverine Passenger Transport

	<u>Passenger transport volume (10,000 persons)</u>	<u>Passenger turnover (100 million person-kilometers)</u>
Total	27,537	136
Coastal	1,185	26
Riverine	26,352	110

Table 2. Coastal and Riverine Goods Transport

	Goods transport volume (10,000 tons)	Goods turnover (100 million ton-kilometers)
Total	36,960	1,507
Coastal	7,117	942
Riverine	29,843	565

In 1981, port handling capacities totaled 307.17 million tons, including 219.31 million tons in coastal ports and 87.86 million tons in Changjiang River ports, thus overfulfilling the plan assignment.

In 1981, riverine transport by articulated push barges also experienced new expansion, with the total number of such articulated barges reaching more than 400,000 tons, an increase of nearly 100,000 tons from 1980. The largest barge train of this type had a capacity of 30,000 tons. Modular [chengzu 2052 4809] transport continued to expand in the loading and unloading of iron and steel, wood, cement, chemical fertilizers and the like. Coastal container transport also developed further. To the ports engaged in international container transport, namely Shanghai, Tianjin, Qingdao, Huangpu and Dalian, were added Guangzhou and Fuzhou. The 7 harbors handled a total volume of 114,000 containers and 687,000 tons of goods, which were increases of 67 and 74 percent, respectively, from 1980. In addition to five existing container routes for domestic container transport in north and east China, four new routes, namely from Shanghai to Dalian, Qingdao and Yantai, and from Dalian to Yantai, were added. A total of 14,365 five-ton containers, with more than 36,000 tons of goods, and 1,068 two-ton containers, with more than 1,200 tons of goods, were carried on these 9 routes, an increase of 68.5 percent from the 1980 volume.

The coastal ports have undertaken vigorous dredging. In 1980 and the first half of 1981, unplanned piling up of foreign trade vessels and large amounts of goods in the ports resulted in serious bottlenecks; a maximum of 372 vessels were in the ports at one point, exceeding capacity by more than 2 times. In March-May 1981, Vice-Premier Wan Li led a working group to investigate 11 coastal ports and study and resolve problems in port operations and construction; they designated the responsible persons in the relevant provinces and cities to personally look after harbor dredging work. With the concern of the State Council, the relevant units intensified their cooperation and the railway stations treated the goods at the ports being dredged as a key task and met the harbor's railcar loading needs. The leadership personnel of the various ports went to the front lines of production, mobilized the masses, utilized all additional potential, and raised loading and unloading efficiency; starting in June there was a fundamental change for the better in the problem of piling up of ships and goods in the ports. The total number of foreign trade vessels loaded and unloaded during the year was 2.3 percent higher than in 1980.

Some units also studied the port management system and conducted spot experiments in reforms. With State Council permission, the Dalian port has begun testing a new system of division of labor between the government and enterprises and has divided the Dalian Port Authority into the Dalian Harbor Management Office and the Dalian United Loading-Unloading Company. The harbor management office is the port's administrative authority and is also responsible for port planning, construction and the like. The United Loading-Unloading Company is an enterprise in charge of harbor transport and loading-unloading management which carries out independent economic accounting.

## 2. Port Construction

In 1981 the ports directly subordinate to the Ministry of Communications completed 470 million yuan worth of capital construction, including 370 million yuan worth of capital construction investment in large- and medium-size coastal port projects. There is a total of 14 large- and medium-sized coastal port construction projects, and they have basically met the plan requirements. Berth No 6 of Stage 2 of the Huangpu pier foundation project, container ship berths in anchorage area No 3 of Tianjin Harbor, two bulk cargo berths in anchorage area No 4 of Tianjin harbor, and a passenger ship building and 6 loading docks at the No 16 Passenger Ship Terminal in Shanghai Harbor have already been completed and tested and handed over for use; a 50,000-ton and a 10,000-ton berth have already become operational at the Dongdu work area in Xiamen Harbor.

The container ship berth in anchorage area No 3 of Tianjin Harbor is China's first modern special-purpose container berth. Its construction is a new step forward for China's marine container transport activities. The wharf has 397.5 meters of frontage and an effective length of 380 meters and can accommodate one ship with a capacity of 1,300 containers; it has a manual handling capacity of 100,000 standard containers. The main equipment and facilities are as follows: two domestically-produced 40.5-ton loading and unloading bridges, 3 Longmen wheeled cranes and a set of large-size forklifts; an 11,000-square-meter receiving area; 136,000 square meters of stacking yard and area roads, 6,694 three-tiered stacking facilities, 132 single-story refrigerated container positions; 7 rail connections and work spurs with a total length of more than 3,200 meters, as well as other auxiliary production and living facilities. The equipment is relatively well balanced and complete, and the layout is rational.

The quality of 116 individual project coastal port projects that have been completed and tested has met standards. A hundred of them, or 98.4 percent, were rated excellent. The Shijiusuo Harbor boat wharf, preparatory cofferdam and block project, the Qinhuangdao coal port Stage 1 front landing stage, the installation of the ore import loading and unloading facilities at Beilun Harbor, and the installation of the Baogang wharf weighing equipment and belt equipment were of a quality surpassing the best past levels; some projects received prizes for superior engineering work.

The dredging work on the key construction projects has also been done well. In 1981, the planned dredging work of three coastal navigation route bureaus



totaled 49.55 square meters, and the planned value was 95.87 million yuan; the actual amount of work done was 58.30 million square meters, with a value of 113.36 million yuan, fulfilling 117.6 and 118 percent of the planned quotas, respectively. The dredging in such key construction projects as the Qinhuangdao coal port, the Tianjin double channel and No 4 anchorage area, and the anchorages and channels at Lianyungang and Zhenhai Harbors, were all done on time with an above-plan amount of work.

In order to vigorously promote water transport, the Ministry of Communications has proposed that in the future we must further speed up harbor construction and expand port handling capabilities. The rail, highway and internal river transport related to the goods collection and dispersal capabilities of the ports must be planned in unified fashion and constructed in synchrony. Coastal harbor construction must persist in building large-, medium- and small-sized ports simultaneously. Under unified planning, it must welcome and encourage active investment by provinces, cities, autonomous regions and factory and mining enterprises in the construction of medium- and small-size ports and special proprietary wharfs, and the Ministry of Communications must support and assist them in terms of planning and construction. At the same time, we must conscientiously make an effort to modernize and renovate existing ports.

### 3. The Water Transport Industry

In 1981, the total output value of the water transport industry directly subordinate to the Ministry of Communications was 550 million yuan: More than 1,000 ships were repaired during the year, including 88 ocean-going vessels, and 27 foreign steamers; in addition, scheduled repairs were done on a certain number of foreign steamers. Because China's repair prices are generally about 20 percent lower than abroad, we have some competitive ability. The Shanghai Marine Transport Company had a 60,000-ton steamer which required repair. A Japanese firm quoted a price of \$3.5 million, while the Guanzhuan Plant in Shanghai accepted the work for 3.5 million yuan and completed the task smoothly.

The water transport industry has also achieved new results in improving ship-building techniques.

### 4. Rescue, Salvage, Towing and Marine Engineering Services

In 1981, rescue, salvage, towing and marine engineering services made great advances. Their earnings were up 14 percent from 1980.

We have expanded our towing activities and actively entered international markets; in 1981 our earnings for foreign towing work totaled 71 percent of overall towing earnings. The towing area and the scope and variety of activities have expanded continuously. We organized the towing of foreign oil drilling platforms and equipment from Japan to the Philippines and India, we organized the towing of two 41,000-ton cement ships from Japan to the Suez Canal and Kuwait, and we used a 5,000-ton flat barge to tow a large-size chemical equipment from Japan to Nanjing, successfully accomplishing a direct

barge delivery by river and ocean; all of these were firsts. The steamer Deyue towed a French Trident 6 drilling platform from Japan to the Apali [phonetic] sea area off the Philippines, and correctly guided it to the pilings at the drilling location, for which it received a special telegram of thanks from the French Kedi [phonetic] Company. When it towed the chemical engineering equipment from Japan, all of the deck reinforcing work was carried out by the tugboat crew, and it passed the test of class 7-8 sea conditions. Our towing work is of good quality and inexpensive, the technology is sophisticated, it is safe and reliable, and a full range of services is provided, so that we have achieved an excellent international reputation.

Marine engineering services are expanding steadily. Of 600 divers, 100 have received certificates in domestic and foreign training courses, and in addition we have added diving and underwater sounding equipment, developing a capability in marine engineering services, and have taken on the towing, positioning and underwater testing of domestic geological and petroleum drilling platforms.

The steamer Huzhou Lao 3 carried out underwater helium-oxygen work at a depth of 76 meters for the Kantan No 2 well site in the South China Sea and conquered class 11 sea conditions to complete the protection of the rig. We have undertaken cooperative services with foreign companies, cooperating with Comex Services in the South China Sea, and have performed underwater diving services at two wells in the Beibuwan for the Daoda'er [phonetic] Company of France. In the East China Sea we have performed towing and protective services for the British BP Company's drilling platforms. The Shanghai Underwater Services platform testing crew cooperated with the U.S. ABS Company and fully accomplished flaw testing and imaging work on the underwater parts of the Nanhai No 1 and Bohai No 6 drilling platforms. The marine engineering services have already established themselves and have excellent development prospects.

The diving equipment manufacturing industry is continually expanding, and the quality of products and technology are continually improving. The Shanghai and Wuhu plants, which are subordinate to the Diving Industry Company, have produced 10 new products which have been highly praised by the users. Currently, to support offshore petroleum development, it is developing and producing diving equipment for the underwater engineering system and is energetically exploring cooperative production of saturated diving system equipment with certain foreign companies.

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## CHINA'S PRICES AND COMMODITY PRICE CONTROL

Beijing ZHONGGUO JINGJI NIANJIAN (1982) [ALMANAC OF CHINA'S ECONOMY (1982)]  
in Chinese 1982 pp V 349-V 353

[Article by Ling Bin [0407 1755]]

[Text] In 1981, China did very good work in controlling market prices, stabilizing prices of agricultural products, intensifying price management and studying price reform; some preliminary results have been achieved.

1. Market prices. In 1981 the retail prices of basic necessities of life were stable; some upward and downward adjustments were made in the retail prices of certain commodities, while market prices remained essentially stable. Of the products whose prices rose, nonstaple food items, particularly vegetables, went up considerably, and there was some rise in prices on fair markets as well.

Price indicators (Table 1) show that in 1981 national retail prices were up 2.4 percent from 1980 (1980 prices were up 6 percent from 1979). The rise was 2.7 percent in the cities and 2.1 percent in the countryside. Consumer goods were up 2.6 percent, agricultural means of production were up 1.7 percent, retail list prices in the state-run commercial sector were up 1.3 percent, prices of negotiated-price commodities were up 3.5 percent, and fair prices were up 6.6 percent. Within the price fluctuation of consumer goods, prices of foodstuffs were up 3.7 percent (list prices for foodstuffs in state-run commercial operations were up 1.9 percent).

The rise in retail prices in 1981 contained three main components.

(1) By authorization of the State Council, the retail prices of certain commodities were adjusted upward or downward. The main instances were as follows. The price of cigarettes (other than class C and D), alcoholic beverages (with the exception of vodka), bamboo cooling bottles, cooling bottle liners, and some local bamboo, wood and leather products (not implemented in certain areas) rose, and the prices of polyester-cotton cloth and corresponding products (such as clothing, sheets, tablecloths, pillowcases and the like), rubber-soled shoes, polyamide stretch stockings, civilian electric meters, television sets, tape recorders and magnetic tape, electronic wristwatches, electric fans, electric refrigerators, honey and the like were

Table 1.

	<u>Index</u>	<u>State commerce list price index</u>
Overall retail price index	102.4	101.3
1. Consumer goods price index	102.6	101.2
a. Foodstuffs	103.7	101.9
Grain	103.9	100.1
Nonstaple foodstuffs	104.1	102.3
Fresh vegetables	110.6	109.3
Tobacco, alcohol, tea	103.3	103.2
Other foodstuffs	102.5	102.2
b. Clothing	99.6	99.6
c. Daily use articles	101.3	101.3
d. Cultural, entertainment	100.4	100.4
e. Medicines and drugs	100.2	100.2
f. Fuels	100.6	100.6
2. Agricultural means of production	101.7	101.7

Note: The general index includes list prices, negotiated prices and fair prices.

lowered. The reason that the prices of bamboo and wood products and leather products were raised was that, in order to promote the development of forestry and livestock raising, in the past few years the state has raised the prices of the relevant items; in 1979-1981 the procurement prices for forest products of collective forestry and the factory prices for wood products from state-run forestry were raised by 78 and 44 percent, respectively; the purchase prices of mao bamboo, leather, cowhide, sheepskin and goat hides were raised by from 20 to 50 percent. But the prices of products for which bamboo, wood and sheepskin were used as starting materials were not adjusted at the same time, so that many of these products produced little profit or even a loss, output went down, some of them went out of stock, and some of them experienced hidden price rises, resulting in inconvenience for production and for daily life. As a result, it has been necessary to suitably raise the prices of bamboo, wood and leather products. The reason for the rise in the price of cigarettes and alcoholic beverages is, first, to take currency out of circulation and increase revenues, and second, to make up for increases in the prices of cured tobacco, charcoal, and fermentation materials; in addition, account was taken of the fact that the supply of high- and medium-class cigarettes and alcoholic beverages has long been unable to meet demand nationwide. Suitably raising the sale prices of cigarettes and alcoholic beverages helps to promote production and to assure that market needs are supplied, but also helps to overcome our current financial difficulties.

(2) The prices of negotiated-price commodities went up, and the proportion of total commodity sales in society accounted for by total negotiated

commodity prices also increased somewhat. In addition, the problems of unauthorized price increases, hidden price increase and unauthorized collection of fees occurred in some units and enterprises. When some localities implemented the economic responsibility system, after linking bonuses to profits the management and oversight system was not correspondingly modified, and there were rather major cases of unauthorized price increases or collection of fees, which increased the load on some enterprises and increased the masses' outlays.

(3) Prices increased in the fair trade. In 1981 agricultural output expanded rather considerably, but there were increases in fair prices, reflecting the existence of excessive amounts of money in circulation, which harmed market prices; at the same time, because the planned circulation channels for some agricultural and sideline products were interfered with and procurement tasks were not carried out well, there were inadequate sources for some commodities in state-run commerce, profiteers bought them up and resold them, and country-fair prices increased. Because of an inadequate supply of some listed-price nonstaple food items, some urban dwellers had no choice but to buy fair commodities or negotiated-price commodities, which increased their living expenses.

In the cities, the source of the most complaints from the masses and the factor which most greatly increased their burden was increased prices for non-staple food products, and particularly for vegetables. Currently the consumption priorities of many urban dwellers are: food first, clothing second, and use items third. Vegetables are an essential daily nonstaple foodstuffs. According to statistics, in 1981 the wholesale price of fresh vegetables nationwide went up by 10.6 percent from the previous year. The list prices of fresh vegetables in state-run commerce were up 9.3 percent. In some cities and industrial and mining areas vegetables were in short supply, quality was poor and prices went up. At the same time, 1981 state subsidies for vegetable purchases paid to residents of 35 large- and middle-size cities averaged nearly 6 yuan per person; funds used directly for vegetable subsidies in these cities totaled 299 million yuan. The short supply of vegetables was influenced by unfavorable natural conditions, but it was mainly a problem of output and supply. All localities are complying with the State Council directive and striving to solve the vegetable problem. Keeping market prices basically stable is an extremely important guideline to which our country will adhere for a long period. In order to assure that the people's lives will be secure and that they will have rice, vegetables, meat and clothing, the state continues to pay price subsidies for such necessities of life as grain, edible oils, cotton, meats and--most important vegetables.

In the countryside, the retail prices of medium- and small-size farm tools and cart trappings made of bamboo, wood and cowhide or sheepskin increased somewhat, so that the peasants had an increased outlay. But the peasants in the areas which produce these products had a gain in income from the rise in procurement prices of these items. Because the prices of class C and D cigarettes and vodka, consumed in rather large quantities by the masses, were not adjusted, the peasants were little affected by the increase in the retail prices of cigarettes and alcoholic beverages, while they gained a certain

economic benefit from the increased procurement price for cured tobacco and the decreased price of polyester-cotton cloth. Because the production teams distribute such items as grain, nonstaple food products and vegetables, which constitute a major part of the peasants' living outlays, at a decreased price, and because the peasants produce some for their own use, their living expenses experienced very little increase as a result of the increased prices of list-price goods and fair goods. On the other hand, in recent years the procurement prices of agricultural produce and sideline products have been adjusted several times, so that production of these items has expanded considerably, and as a result of the increase in the quantities of produce and sideline products sold to the state by the people and the rise in their prices, the peasants' income has increased considerably and their living conditions have been markedly improved.

In its "Decision on the Report 'The Current Economic Situation and Guidelines for Future Economic Construction.'" the Fourth Session of the Fifth National People's Congress, held at the end of 1981 stated, "Since the Third Session of the Fifth National People's Congress, the State Council has made major efforts to further readjust the economy and develop construction and has striven to balance finances and stabilize prices; as a result it has overcome many difficulties and achieved many significant results. The National People's Congress expresses its satisfaction with the State Council's work. But the essential balance between government revenues and outlays has not been consolidated, and the prices of some commodities have risen while essential price stability was being achieved. The National People's Congress instructs the State Council to further strengthen management of government finance, credit and prices, to assure a basic balance of government revenues and outlays, and to assure that market prices are basically stable, while focusing on developing production and carrying out vigorous conservation efforts." In accordance with this decision, the relevant State Council departments have developed a specific work program. As regards prices, it is necessary to rectify and stabilize procurement prices for agricultural produce and sideline products, to strictly control the readjustment of all types of plan-specified list prices, to determinedly stabilize the retail prices of basic living needs, to continue strengthening management and oversight of prices, and to put a stop to such erroneous methods as unauthorized price increases, hidden price increases, driving up of negotiated prices, and unauthorized collection of fees.

2. Prices of agricultural products. In 1981 the overall procurement price level for agricultural produce and sideline products nationwide increased by 22.1 percent over the 1979 level and 7.1 percent over the 1980 level. Minor readjustments were made: the procurement prices of soybeans, soybean oil, cured tobacco, mao bamboo, toilet paper made from bamboo fiber, guoguang apples, black mu'er mushrooms, day lilies, prawns, products of collective forestry, and Shaanxi Province qingmao tea, and the factory prices of wood products from state-run forestry were increased, and the procurement prices of hemp, merino wool, and of mint and kelp in some localities, were decreased.

The procurement prices of walnuts and honey were allowed to float within 15 percent of the list prices, and the procurement prices of some Chinese medicinal products were revised upwards or downwards. The result of readjustment of list prices, together with the effect of increased negotiated-price

procurement and increased payment of premium prices for excess procurement, resulted in an overall procurement price level for agricultural produce and sideline products nationwide in 1981, 5.9 percent higher than that of the previous year.

In the past 3 years the number of types of agricultural produce and sideline products for which procurement prices were raised and the size of the increases exceeded those for any other period since Liberation. In 1981, the overall level of procurement prices for agricultural produce and sideline products was up by 201.2 percent from the 1950 level. In the period 1950-1978, these prices increased by 117.4 percent, an average of 2.8 percent a year, while in 1979-1981 they were raised by 38.5 percent, an average of 11.5 percent a year. The amount of agricultural produce and sideline products exchanged for manufactured goods stood at an index value of 269 in 1981, up more than 1½ times from the 1950 index of 100. As a result of price changes, in 1981 the peasants nationwide received 20.9 billion yuan more than in 1978 for the quantities of agricultural produce and sideline products sold in that year. This fact was very important in stimulating the peasants' production enthusiasm, promoting the development of agricultural production, and improving the peasants' condition of life; in addition, it will have far-reaching effects on the sustained development of the national economy. As a result of many years of price adjustments, great changes have been made in the hitherto excessively low prices for agricultural produce, and the current prices are suited to the conditions of development of the national economy. The state has already made great efforts in organizing financial and material resources in order to raise the prices of agricultural products, which has caused the peasants great satisfaction.

In the immediate future the procurement prices for agricultural products should remain essentially stable. This is because if they continued to rise, the state would have to increase wages or continue to increase price subsidies in order to assure that the standard of living of employees did not fall, which would expand government deficits and hinder stabilization of the economy and of prices. Moreover, lack of sufficient manufactured goods to meet the demands of the peasants' purchasing power might intensify the imbalance between purchasing power and commodity supplies, resulting in inflation and rising prices. Ultimately the benefits which the peasants had derived from increased prices for agricultural products would be lost. Weighing the advantages and disadvantages and taking account of state financial resources and industrial production levels, in the immediate future stabilizing the procurement prices for agricultural products will help to stabilize the current rural economic policy and encourage the peasants to become prosperous through production; it is quite necessary to achieve a fundamental change for the better in state finances and to assure the basic stability of market prices.

While stabilizing the procurement prices of agricultural products, we must rectify pricing which exceeds state limits and is unreasonable. This includes unauthorized raising of list procurement prices of agricultural produce and sideline products, driving up negotiated prices, increasing negotiated price proportionalities and the scope of negotiated prices, classifying goods in higher class to raise prices, expanding the scope and size of price increases,

unauthorized collection of additional subsidies or fees, unauthorized raising of the standards for incentive-sale commodities, kickbacks on profits, exceeding authority in lowering procurement price base figures and decreasing or forging taxes and the like. We must establish a unified national approach with regard to prices for agricultural products, stress the subordination of local interests to overall interests, determinedly treat procurement list prices as the key item, exercise some control over price rises and negotiated prices, and proceed cautiously and appropriately in setting prices; we must continue to rectify activities which violate state policy. Readjustment of procurement prices for agricultural products must help stimulate the planned, proportionate development of production, take account of the interests of the state, the producers and the consumers, embody both current and long-term interests, strive to improve their scientific character and make them less ad-hoc, and avoid important setbacks.

3. Price management. Price management is a component of overall economic management which assures the implementation of price policy and price discipline. China's prices are subject to a system of unified guidance and level-by-level management. State price guidelines and policy, price laws and price adjustment plans are drafted and authorized by the State Council. Major industrial and agricultural product prices, communications and transport prices (rail, civil aviation, marine transport and Changjiang transport), and noncommodity fees (postal fees and the like), fees for the main tourist services and tourist products and principles and methods of in-country pricing of import and export commodities, are managed by the State General Office of Prices and the relevant departments of the State Council, while the State General Office of Prices is in charge of overall balancing. When these agencies draft or adjust important prices or fees which affect the national economy and the people's livelihood, they must request permission from the State Council. Other industrial and agricultural product prices, communications and transport prices, noncommodity fees and the like are managed by the pricing departments of the people's governments at the various levels and the various functional departments, while the pricing departments are in charge of overall balancing. When drafting or adjusting prices or fees which will have a considerable effect, they must request permission from the people's governments at the same level, or when necessary, from the province, city or autonomous region people's government.

Based on the principles stated above, lists of products subject to price or fee management by the central organs or local organs at the various levels are drafted to establish their respective areas of jurisdictions. On the basis of price management jurisdiction, the central and local cognizant organs at all levels arrange or establish all types of industrial and agricultural product prices, communications and transport prices, differentials between purchase and sale price and between wholesale and retail price, regional price differentials, quality differentials, seasonal price differentials, and prices for allocated supply on the basis of state pricing guidelines, policies, principles and methods, as well as setting specific tourist commodity prices, tourist service fees and import and export commodity prices.

When establishing or adjusting prices or fees, the central and local organs must not exceed their authority. Enterprises and services must implement



state pricing guidelines and policies, correctly implement the relevant prices and fees, report on their compliance, and provide data or suggestions. In order to carry out price management effectively, the relevant departments, enterprises and services generally should provide themselves with full-time or part-time pricing personnel and establish a post responsibility system, an inspection system, a call accounting system, a price marking system, a security system and a system of rewards and penalties. In recent years, as a result of propaganda and education regarding price policy, price investigations, hiring of price inspection personnel, publication of price oversight telephone numbers, support of mass-style exposes of violations of price discipline, and strict dealing with typical cases, the various localities have strengthened price management and oversight.

In 1981, the State Council and its relevant departments published a series of regulations on price management work, the main points of which are as follows.

(1) In agricultural product pricing, price policy and price management jurisdictions must be strictly observed, the unified purchase and requisition purchase systems must be adhered to, and planned production and planned market supply of vegetables must be observed. Agricultural products which according to regulations are subject to monopoly state purchase may not be purchased by other organizations, and unauthorized lowering of procurement price base figures, increasing of negotiated price proportionalities or raising of prices or subsidies is not permitted. The agricultural product prices in adjacent areas must be harmonized, and raising prices in order to compete for purchase is forbidden. The scope and price range of products subject to negotiated procurement or sale may not be changed without authorization, and the cognizant management or administrative offices must exercise suitable restraints and control. The regulations in the document "Decision on Certain Problems of Protecting Forests and Expanding the Forestry Industry" issued by the CPC Central Committee and the State Council specifies that "timber is not subject to negotiated procurement or sale." The State Council has also issued special notices regarding price management of products such as cured tobacco, tung oil, raw lacquer, timber, hairtail fish and the like. The State General Office of Prices, the General Supply and Marketing Cooperative, the Ministry of Commerce, the Ministry of Grain, the Ministry of Foreign Trade, the State General Office of Aquatic Products, the State General Office of Medicines and Pharmaceuticals and the General Office of Industrial Administration and Management have drafted the "Provisional Management Procedures for Negotiated Purchase and Sale Prices of Agricultural Produce and Sideline Products (Draft)," which has been approved by the State council and is being implemented on a trial basis throughout the country. It gives specific rules regarding the scope, pricing principles and price management of negotiated procurement and negotiated sale commodities and gives a table of 132 types of agricultural and sideline products in classes 1 and 2 (see Table 2).

Prices of class 3 commodities which are not on the list are to be managed by the localities.

Table 2. List of Agricultural and Sideline Products in Categories 1 and 2.

Category 1: grain, cotton, edible oils, timber.

Category 2: a. Products under the jurisdiction of the General Supply and Marketing Cooperative

jute, ramie, cured tobacco, wool, cashmere, cowhide, goat-skin, sheepskin, xiaohu sheepskin, kidskin, feathers, hog casings, hog bristles, silkworm cocoons, tussah moth cocoons, tea leaves, famous brand sun-cured tobacco, grass mats, coir, mao bamboo, hao bamboo, citrus fruit, hand-made paper, honey, raw lacquer, apples, mu'er mushrooms, star anise, hua [3736] skins, goat wool, lamb casings, red dates, hot pickled mustard root, day lilies, rush mats, charcoal, farm animals, hemp, goat casings.

b. Products under the jurisdiction of the Ministry of Commerce  
live pigs, beef cattle, slaughter sheep, fresh eggs.

c. Products under the jurisdiction of the Ministry of Forestry  
live pigs, beef cattle, slaughter sheep, fresh eggs.

d. Products under the jurisdiction of the General Office of Aquatic Products

large yellow croakers, small yellow croakers, hairtails, cuttlefish, Spanish mackerel, pomfret, Chinese herring, conger pike, Pacific herring, slate cod croakers, flounder, prawns, abalone, shark's fins, fish maw, sea cucumber, dried scallop, dried shrimp, small dried shrimp, squid, jellyfish.

e. Products under the jurisdiction of the Ministry of Grains  
tung oil, castor oil, mu [2606] oil, Chinese tallow tree oil, catalpa oil.

f. Products under the jurisdiction of the Ministry of Foreign Trade

peppermint oil, citronella oil.

g. Products under the jurisdiction of the General Office of Medicines and Pharmaceuticals (including valuable medicinals)

[table continued]

[continuation of Table 2]

musk, bezoar, Chinese goldthread root, fritillary bulb, licorice root, Chinese wolfberry, Chinese yam, yuanhu [0337 5170], Eucommia bark, taro, yinhua [6892 5363], safflower, ginseng (including wild mountain ginseng), dangshen (Codonopsis pilosula), Chinese angelica, chuanxiong root (Ligusticum wallichii), rehmannia root, Atractylodes macrocephala root, herbaceous peony root, fuling (Poris cocos), dwarf lilyturf root (Ophiopogon japonicus), monkshood, yunmuxiang [0061 2606 7449], Achyranthes bidentata root, Zhejiang figwort root, tree peony root bark, pseudoginseng, stag antler, membranous milkvetch root, chrysanthemum flowers;

magnolia bark, Gastrodia elata tuber, sharen [4263 0088], Chinese caterpillar fungus, pearls, tiger bone, leopard bone, bear gallbladder, guanchong [0356 5722], Chinese cassia, Agalloch eaglewood, toad cake, baji [1572 2060], ajiao [7093 5231], rhinoceros horn, guang [1639] horn, antelope horn, frankincense, myrrh, dragon's blood (Daemonorops draco), sandalwood, gongdingxiang [0361 0002 7449], xihonghua [6007 4767 5363].

h. Products under the jurisdiction of the Ministry of Light Industry

sugar cane, sugar beet.

(2) With regard to industrial product prices, with the permission of the State Council, the State General Office of Prices issued the document "Some Temporary Measures Regarding the Prices of Heavy Industry Products," which reaffirmed that heavy industry products were not subject to price negotiations, and in addition laid down some specifications regarding pricing principles for temporary prices, cooperative prices, local prices, floating prices, and self-marketed prices for relevant items and for commodity fees, permitting certain flexible measures to be taken. This year, some small adjustments are again being made in the factory prices of manufactured goods; with the permission of the State Council and the relevant departments, the factory prices of sawn wood, wood products, ordinary plywood, some white printing paper and newsprint, and six types of metal products, i.e. medium- and small-size angle steel, steel slabs, industrial channel steel, ordinary cold- and hot-rolled steel strip, thin strip 1.5 mm thick or less, and some small-size ingots, were raised. The factory prices of television sets, quartz glass, baling presses, Yueye motor vehicles and some 5-ton trucks were raised. The factory prices of some seismographs and meters and instruments have been revised upwards or downwards.

(3) As regards market prices, the "Directive Regarding Strengthening Market Management, Combatting Speculation, Profiteering and Smuggling" issued by the

State Council listed several types of speculation and profiteering activities, including the following related to prices: illegally reselling industrial and agricultural means of production; raising prices offered or rushing to purchase commodities to be procured under the state plan; buying up products from state-run stores or supply and marketing cooperative retail stores and reselling them at a higher price; acting as ringleader in the reselling of wholesale items; cornering of markets by deception, hoarding to corner markets, and driving up prices; reselling plan-allocated supply certificates and negotiable bank securities; reselling bullion, foreign currency, jewels, cultural relics, foreign goods, valuable medicinal items and the like. Any units or individuals which engage in profiteering and speculation must be punished according to regulations or suffer confiscation of property; and in serious cases they must be handed over to the legal organs for action. In the documents "Notice on Readjustment of the Price of Polyester-Cotton Cloth and Cigarettes and Alcoholic Beverages" and "Notice on Conscientious, Effective Performance of Pricing Work," the State Council states that in view of the fact that the task of stabilizing market prices is still an arduous one, we must strengthen price management and tighten up price discipline. Government bodies at all levels must conscientiously strengthen their leadership of price management work. They must unite the full-time and part-time pricing personnel in large and medium cities with price inspection functionaries and organize a price inspection network. In cases of violation of price policy and discipline, they must investigate and determine the full situation and deal with it severely, enforcing discipline where necessary.

4. Price forms. Based on the principle that the planned economy is primary and market adjustment is secondary, in price adjustment we must treat state-set plan prices as primary and other more flexible price forms as secondary. In recent years, in order to invigorate the economy, China has implemented a circulation system involving "diversity of economic components, multiple circulation channels, a variety of management forms, and a smaller number of stages in circulation" in its markets. In price management it has correspondingly adopted several relatively flexible forms as supplements to state price setting. Currently there are four main pricing forms.

(1) State-established planned prices, also called state prices. State prices cover all industrial and agricultural products, communications and transport prices and fee standards which have a major effect on the national economy and people's livelihood. The output of products with state prices accounts for a large proportion of total industrial and agricultural output value. State prices are the main form of planned prices and include price setting by the central government and the local jurisdictions. The great majority of state prices are established by the relevant departments of the State Council or the provinces, municipalities and autonomous regions, while a small proportion are set by the relevant departments of the prefectures, cities and counties; they are managed at various levels under the unified leadership of the State pricing guidelines and policies in accordance with the established price management jurisdiction.

(2) Floating prices. This is a relatively flexible form of planned pricing. Floating-price items and their range of price variation are set by the pricing

departments and functional departments in accordance with their areas of jurisdiction. Based on the state price, some products may float downward and some may float upward, while some may float in either direction. Within the specified range of variation, the producer enterprises or operating units have the right to adjust their prices flexibly over time to respond to market supply and demand and their production and sales situations. At present the main products which have provisionally been given floating prices are certain heavy industry goods, with a range of variation generally between 5 and 30 percent; a few products may vary by up to 50 percent. Items whose prices may float downward include some electronic products, mechanical engineering products, agricultural machinery, chemical products and metallurgical products; most may float downward within a specific range, while some have no lower limit. The prices of some agricultural machinery and tools and centrifugal pumps may float either upwards or downwards; some have set upper and lower limits, while others have an upper limit and no lower limit. The prices of highway transport in some localities are allowed to float downward. In light industry, the prices of high pressure polyethylene products may float upwards or downwards by 5 percent, while the prices of some varieties of honey and walnuts may float downward by 15 percent, while the prices of daylily flowers (beyond plan quotas, when the prices are negotiable) may float upward or downward by 15 percent.

(3) Negotiated procurement or sale prices. The State Council has specified that means of production allocated by the state plan (including excess production and self-marketed production) class 1 and 2 daily-use manufactured goods, timber and cotton are not subject to price negotiation. Currently the main commodities subject to price negotiation are class 3 agricultural and sideline products, and class 1 and 2 agricultural and sideline products in excess of procurement quotas which are allowed to be put on the market.

The purpose of restoring negotiated procurement and sale for certain agricultural products is to revive the production and circulation of certain minor products, to stimulate faster development of production, to expand the range of varieties and to increase market supplies. In order to maintain essential stability of market prices, before the procurement quotas have been met, class 1 and 2 agricultural produce and sideline products may not be exchanged at negotiated prices; class 1 and 2 agricultural and sideline products which are heavy industry starting materials, livestock products, major vegetables for large and medium cities and industrial and mining areas, and Chinese medicinal products (including valuable medicinal products) may not have their prices negotiated; nor may incentive-sale and exchange commodities in foreign trade commodity bases have their prices negotiated. A few important class 3 agricultural and sideline products are subject to partial requisition purchase in the major producing regions, while the remainder fall into the negotiated price category. Negotiated procurement prices of agricultural products generally do not exceed 30 percent of the list price; but in the case of some products for which the list price is relatively low or for which the list and market price differential is large they may exceed 30 percent of the list price. Products for which supply exceeds demand may also be priced slightly lower than the quoted procurement price. Negotiated sale prices are based on negotiated procurement prices and may be determined in terms of rational

product circulation and necessary expenses and a slight profit (holding overall profit to 2-3 percent); they generally should be lower than the current local fair prices. Negotiated prices of grains and edible oils should have rational geographical and seasonal price differentials.

(4) Fair prices. Fair trade in the countryside and the cities is a necessary supplement to socialist commerce. Fair prices are determined by the two parties; they rise and fall in accordance with supply and demand conditions. According to state policy, economic methods and administrative intervention should be used to strengthen management of fair trade and to keep the difference between quoted and market prices from becoming too large, and we must continue invigorating the markets and utilizing their advantages.

According to statistics, the share of these price forms in total retail sales in the society during 1981 were as follows: planned prices (including state prices and floating prices), 92.5 percent; negotiated procurement and sale prices, 3.7 percent; fair prices, 3.8 percent.

Given the coexistence of these four price forms, the price-setting powers of the industrial and commercial enterprises have been somewhat expanded, as follows: (1) they may set specific product prices for authorized floating-price commodities within the specified range of variation; (2) they may negotiate commodity prices for authorized negotiated procurement and negotiated sale items within the maximum and minimum limits; (3) they may consult on prices of authorized class 3 daily-use small manufactured goods in controlled fashion in accordance with specified pricing principles and methods; (4) they may set commodity prices for one-time products not priced by the state; (5) they may set the prices for special-request items with user-stated specifications, quality and packaging and the like; (6) they may determine processing prices for remnants, rejects and seconds in accordance with the authority specified by the cognizant departments; (7) they may set prices for food products not subject to unified pricing in accordance with the gross profit figures specified by the cognizant departments for the catering and pastry industries.

The use of more flexible pricing forms is a preliminary experiment in improving price management, and we must summarize experience and constantly improve it.

5. Reform of the pricing system. For a long period the prices of some of China's industrial and agricultural products have been irrational. For example, some high-demand products had high prices and large profits, so that they became overstocked and sales stagnated; some limited-demand items had low prices and small profits, so that supply did not meet demand and they were off the market for long periods. Some enterprises did not act to increase economic benefits, but relied on excessively high product prices to achieve high profits; the prices of some enterprises' products were too low, so that their profits were very small or they even lost money. Some of the price irrationalities are a historical legacy, while some involve changes in resource conditions, production conditions or supply relationships, some resulted from a lack of timely adjustment of pricing principles and methods, and some involved

work errors; by the interaction of several different factors, the situation has become more and more complex and problems have piled up.

In the last few years the state has carried out a planned readjustment of the prices of some industrial and agricultural products, and there has been some improvement in the problem of irrational prices; the concerned parties have presented numerous helpful views on methods of reform. It is generally recognized that pricing problems should be considered not merely in terms of economics, but particularly in terms of political factors. Price reform is necessary from both long-term and current considerations, but in the short term, price stability should be the primary factor, i.e. prices should be essentially unchanged, and only a few extremely irrational prices which clearly affect production should be adjusted. The pricing reform should be carried out in terms of China's specific conditions, a conscientious effort should be made to deal with the various chain reactions resulting from price changes, and every effort should be made to integrate them with reform of the tax system and with wage reform. In view of the close connection between price reform and economic reform, the relevant administrative departments, scientific research organizations and large specialized academies and schools are organizing contingents to systematically collect and organize cost figures and basic price data to be used in calculating theoretical prices and developing price reforms programs and proposals, and to serve as reference material for the concerned parties and the policy-making organs.

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CSO: 4006/258

# MAJOR ECONOMIC INDICATORS FOR ANHUI PROVINCE

Beijing ZHONGGUO JINGJI NIANJIAN (1982) [ALMANAC OF CHINA'S ECONOMY (1982)]  
in Chinese 1982 p VI.88

[Table]

	单 1 位	1980年	1981年	备 2 注
3 一、人口数 (年底数)	万29 人	4,892.78	4,956.55	
4 二、职工人数 (年底数)	万 人	342.43	356.28	全民和集体所有制 40
5 三、工农业总产值	亿30 元	188.01	212.63	按1970年不变价格计算 41
6 农业总产值	亿 元	66.32	83.93	按1970年不变价格计算
7 工业总产值	亿 元	121.69	128.69	按1970年不变价格计算
8 轻工业产值	亿 元	63.52	71.91	按1970年不变价格计算
9 重工业产值	亿 元	58.17	56.78	按1970年不变价格计算
10 四、地方财政收入	亿 元	14.39	14.74	
11 五、基本建设投资	亿 元	14.56	11.14	全民所有制 42
12 六、货物周转量	31 亿吨公里	28.84	33.30	
13 七、社会商品零售额	亿30 元	75.38	82.54	包括农民对非农业居民零售 43
14 八、工农业主要产品产量				
15 原 煤	万32 吨	2,411.39	2,382.40	
16 发 电 量	亿33 度	96.34	97.135	
17 钢	万32 吨	136.26	140.07	
18 棉 布	万34 米	52,408	52,978	
19 粮 食	亿35 斤	290.78	357.48	
20 棉 花	万36 担	244.07	312.81	
21 油 料	万 担	995.98	1,986.82	
22 生猪年末存栏数	万37 头	1,114.11	1,033.96	
23 九、各级学校在校学生人数	万29 人	1,063.57	1,006.98	
24 大 学 生	38 人	37,627	45,491	
25 中 学 生	万29 人	251.79	222.94	
26 小 学 生	万 人	808.02	779.49	
27 十、医院床位数	39 张	76,283	77,126	
28 专业卫生技术人员	万29 人	10.48	11.08	不包括赤脚医生 44

45 注: 1. 1981年粮食产量系省委核定数; 2. 货物周转量系地方交通完成数, 不包括铁路、长航和民航完成数。



Key:

1. Unit
2. Notes
3. 1. Population (year-end figure)
4. 2. Workers (year-end figure)
5. 3. Gross output value of industry and agriculture
6.     Gross output value of agriculture
7.     Gross output value of industry
8.     Output value of light industry
9.     Output value of heavy industry
10. 4. Regional government revenues
11. 5. Investment in capital construction
12. 6. Volume of goods circulated
13. 7. Social commodity retail sales
14. 8. Output of major industrial and agricultural products
15.     Raw coal
16.     Electricity
17.     Steel
18.     Cotton cloth
19.     Grain
20.     Cotton
21.     Oil-bearing crops
22.     Year-end number of live hogs in inventory
23. 9. Number of students in schools
24.     College students
25.     Secondary
26.     Primary
27. 10. Number of hospital beds
28.     Health technicians
29. 10,000 people
30. 100 million yuan
31. 100 million ton kilometers
32. 10,000 tons
33. 100 million kWh
34. 10,000 meters
35. 100 million jin
36. 10,000 dan
37. 10,000 head
38. 10,000 persons
39. Units
40. Ownership by all the people and by collectives
41. Figured at 1970 constant prices
42. Ownership by all the people
43. Including peasant sales to nonfarm residents
44. Not including barefoot doctors
45. Note: 1. 1981 grain output verified by provincial CPC committee.  
          2. Volume of goods circulated is locally transported amounts,  
              and does not include amounts shipped by railroad, over long  
              distances by water or by civilian water transportation.

CSO: 4006/259

# MAJOR ECONOMIC INDICATORS FOR FUJIAN PROVINCE

Beijing ZHONGGUO JINGJI NIANJIAN (1982). [ALMANAC OF CHINA'S ECONOMY (1982)]  
in Chinese 1982 p VI 96

[Table]

	1 单 位	1980年	1981年	备 2 注
3 一、人口数	万 28人	2,517.8	2556.9	年 末 数 38
4 二、职工数 (年末数)	万 人	231.11	242.44	全民和集体所有制 39
5 三、工农业总产值	亿 29元	116.83	125.32	按1970年不变价格计算 40
6 农业总产值	亿 元	41.33	44.12	按1970年不变价格计算
7 工业总产值	亿 元	75.50	81.20	按1970年不变价格计算
8 轻工业产值	亿 元	46.48	51.82	按1970年不变价格计算
9 重工业产值	亿 元	29.02	29.30	按1970年不变价格计算
10 四、地方财政收入	亿 元	15.33	14.49	
11 五、基本建设投资	亿 元	10.33	8.70	全民所有制 41
12 六、货物周转量	30 亿吨公里	84.49	82.23	各种运输工具 42
13 七、社会商品零售额	亿 29元	54.20	60.06	包括农民对非农业居民零售 43
14 八、工农业主要产品产量				
15 原 煤	31 万 吨	462.99	416.55	
16 发 电 量	32 亿 度	49.47	52.46	
17 钢	31 万 吨	24.16	21.90	
18 棉 布	33 亿 米	1.28	1.38	
19 粮 食	34 万 吨	801.9	809.85	
20 油 料	35 万 吨	13.48	18.50	
21 猪 牛 羊	36 万 头	858.18	873.38	年末存栏数 44
22 九、各级学校在校学生数	万 28人	491.3	510.8	
23 大 学 生	万 人	2.21	2.25	省属高等院校学生数 45
24 中 学 生	万 人	109.43	104.8	
25 小 学 生	万 人	376.42	400.42	
26 十、医院床位数	万 37张	4.68	4.81	
27 专业卫生技术人员	万 28人	7.39	7.63	不包括赤脚医生 46

Key:

1. Unit
2. Notes
3. 1. Population
4. 2. Workers (year-end figure)
5. 3. Gross output value of industry and agriculture
6.       Gross output value of agriculture
7.       Gross output value of industry
8.       Output value of light industry
9.       Output value of heavy industry
10. 4. Regional government revenues
11. 5. Investment in capital construction
12. 6. Volume of goods circulated
13. 7. Social commodity retail sales
14. 8. Output of major industrial and agricultural products
15.       Raw coal
16.       Electricity
17.       Steel
18.       Cotton cloth
19.       Grain
20.       Oil-bearing crops
21.       Hogs, cattle, sheep and goats
22. 9. Number of students in schools
23.       College
24.       Secondary
25.       Primary
26. 10. Number of hospital beds
27.       Health technicians
28. 10,000 people
29. 100 million yuan
30. 100 million ton kilometers
31. 10,000 tons
32. 100 million kWh
33. 10,000 meters
34. 100 million jin
35. 10,000 dan
36. 10,000 head
37. 10,000 units
38. Year-end figure
39. Ownership by all the people and by collectives
40. Figured at 1970 constant prices
41. Ownership by all the people
42. Using all forms of transportation
43. Including peasant sales to nonfarm residents
44. Year-end number in inventory
45. Provincial institutions of higher learning
46. Not including barefoot doctors

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# Structure of Major Export Commodities

	1980年		1981年	
	1 出口额(万美元)	2 占出口总额的%	1 出口额(万美元)	2 占出口总额的%
3 出 口 总 额	36.140	100.0	38.047	100.0
4 其中: 一、农副产品及其加工品	22.245	61.55	21.068	55.37
5 二、轻、手、纺产品	10.088	27.92	11.238	29.54
6 三、工矿产品	3.807	10.53	5.741	15.09

## Key:

1. Exports (\$10,000)
2. Percent of total
3. Total exports
4. Including:
  1. Agricultural sideline products and products processed from them
  2. Light industrial, handicraft, and textile products
  3. Products of industry and mining
- 5.
- 6.

CSO: 4006/259

# MAJOR ECONOMIC INDICATORS FOR GUANGDONG PROVINCE

Beijing ZHONGGUO JINGJI NIANJIAN (1982) [ALMANAC OF CHINA'S ECONOMY (1982)]  
in Chinese 1982 p VI 134

[Table]

	1 单 位	1980年	1981年	备 2 注	
3	一、人口数	29 万人	5,780.20	5,884.06	年末数 38
4	二、职工人数 (年底数)	万人	646.01	678.02	全民和集体所有制 39
5	三、工农业总产值	30 亿元	312.10	342.84	按1970年不变价格计算 40
	6 农业总产值	亿元	88.10	92.94	按1970年不变价格计算
	7 工业总产值	亿元	224.05	249.90	按1970年不变价格计算
	8 轻工业产值	亿元	138.51	163.04	按1970年不变价格计算
	9 重工业产值	亿元	85.54	86.86	按1970年不变价格计算
10	四、地方财政收入	亿元	37.28	40.58	按1970年不变价格计算
11	五、基本建设投资	亿元	25.72	31.79	全民所有制 41
12	六、货物周转量	31亿吨公里	1,199.8	1,182.1	各种运输工具 42
13	七、社会商品零售额	30 亿元	140.72	166.58	包括农民对非农业居民零售 43
14	八、工农业主要产品产量				
	15 原 煤	32万吨	804.0	723.47	
	16 发电量	33亿度	113.16	122.39	
	17 钢	32万吨	40.26	39.89	
	18 棉 布	34万米	—	—	
	19 粮 食	35亿斤	359.41	328.74	
	20 棉 花	亿斤	—	—	
	21 油 料	32万吨	53.15	61.01	
	22 猪牛羊存栏	36万头	2,337.4	2,428.4	
23	九、各级学校在校学生人数	29万人	1,125.34	1,075.18	
	24 大学生	万人	4.41	4.76	
	25 中学生	万人	282.20	245.19	
	26 小学生	万人	838.73	825.23	
27	十、医院床位数	37万张	10.4	10.5	
28	专业卫生技术人员	万人	16.7	17.6	不包括赤脚医生 44

Key:

1. Unit
2. Notes
3. 1. Population
4. 2. Workers
5. 3. Gross output value of industry and agriculture
6.     Gross output value of agriculture
7.     Gross output value of industry
8.     Output value of light industry
9.     Output value of heavy industry
10. 4. Regional government revenues
11. 5. Investment in capital construction
12. 6. Volume of goods circulated
13. 7. Social commodity retail sales
14. 8. Output of major industrial and agricultural products
15.     Raw coal
16.     Electricity
17.     Steel
18.     Cotton cloth
19.     Grain
20.     Cotton
21.     Oil-bearing crops
22.     Hogs, cattle, goats and sheep in inventory
23. 9. Number of students in schools
24.     College
25.     Secondary
26.     Primary
27. 10. Number of hospital beds
28.     Health technicians
29. 10,000 people
30. 100 million yuan
31. 100 million ton kilometers
32. 10,000 tons
33. 100 million kWh
34. 10,000 meters
35. 100 million jin
36. 10,000 head
37. 10,000 units
38. Year-end figure
39. Ownership by all the people and by collectives
40. Figured at 1970 constant prices
41. Ownership by all the people
42. Using all forms of transportation
43. Including peasant sales to nonfarm residents
44. Not including barefoot doctors

CSO: 4006/259

# MAJOR ECONOMIC INDICATORS FOR GUANGXI-ZHUANG AUTONOMOUS REGION

Beijing ZHONGGUO JINGJI NIANJIAN (1982) [ALMANAC OF CHINA'S ECONOMY (1982)]  
in Chinese 1982 pp VI 140-VI 141

[Table]

	1 单 位	1980年	1981年	备 2 注
3 一、人口数	31 万人	3,538.41	3,612.84	年末数 38
4 二、职工人数 (年底数)	万人	248.82	260.07	全民和集体所有制 39
5 三、工农业总产值	32 亿元	127.70	134.26	按1970年不变价格计算 40
6 农业总产值	亿元	50.16	52.69	按1970年不变价格计算
7 工业总产值	亿元	77.54	81.57	按1970年不变价格计算
8 轻工业产值	亿元	45.51	52.81	按1970年不变价格计算
9 重工业产值	亿元	32.03	28.76	按1970年不变价格计算
10 四、地方财政收入	亿元	12.58	13.03	
11 五、基本建设投资	亿元	10.31	6.83	全民所有制 41
12 六、货物周转量	33 亿吨公里	160.40	165.17	各种运输工具 42
13 七、社会商品零售额	32 亿元	54.83	59.09	包括农民对非农业居民零售 43
14 八、工农业主要产品产量				
15 原 煤	34 万吨	589.66	560.87	
16 发 电 量	35 亿度	53.64	55.78	
17 钢	34 万吨	20.82	22.76	
18 棉 布	36 万米	13.600	14.700	
19 糖	34 万吨	41.61	48.58	
20 粮 食	万吨	1,190.4	1,149.5	
21 油 料	万吨	13.73	14.24	
22 水 果	万吨	20.9	27.0	
23 甘 蔗	万吨	401.9	527.5	
24 猪牛羊肉		40.05	43.17	
25 九、各级学校在校学生人数	31 万人	668.83	634.55	
26 大学生	31 万人	2.55	2.43	
27 中学生	万人	163.80	128.06	包括中专 44
28 小学生	万人	502.48	504.06	
29 十、医院床位数	37 万张	4.76	4.91	
30 专业卫生技术人员	万人	4.37	4.71	不包括赤脚医生 45



Key:

1. Unit
2. Notes
3. 1. Population
4. 2. Workers (year-end figure)
5. 3. Gross output value of industry and agriculture
6.     Gross output value of agriculture
7.     Gross output value of industry
8.         Output value of light industry
9.         Output value of heavy industry
10. 4. Regional government revenues
11. 5. Investment in capital construction
12. 6. Volume of goods circulated
13. 7. Social commodity retail sales
14. 8. Output of all major industrial and agricultural products
15.     Raw coal
16.     Electricity
17.     Steel
18.     Cotton cloth
19.     Sugar
20.     Grain
21.     Oil-bearing crops
22.     Fruit
23.     Sugar cane
24.     Pork, beef, and mutton (or goat)
25. 9. Number of students in school
26.     College
27.     Secondary
28.     Primary
29. 10. Number of hospital beds
30.     Health technicians
31. 10,000 persons
32. 100 million yuan
33. 100 million ton kilometers
34. 10,000 tons
35. 100 million kWh
36. 10,000 meters
37. 10,000 units
38. Year-end figure
39. Ownership by all the people and by collectives
40. Figured at 1970 constant prices
41. Ownership by all the people
42. All forms of transportation
43. Including peasant sales to nonfarm residents
44. Including technical schools
45. Not including barefoot doctors

CSO: 4006/259

MAJOR ECONOMIC INDICATORS FOR GUIZHOU PROVINCE

Beijing ZHONGGUO JINGJI NIANJIAN (1982) [ALMANAC OF CHINA'S ECONOMY (1982)]  
in Chinese 1982 p VI 153

[Table]

	单 1 位	1981年	1980年	备 2 注
3 一、人口	37万人	2826.78	2776.67	年末数 46
4 二、职工人数	万人	185.73	179.44	全民所有制和集体所有制 47
5 三、工农业总产值	38亿元	73.61	73.31	按1970年不变价格计算 48
6 农业总产值	亿元	31.01	29.28	按1970年不变价格计算
7 农业产值	亿元	19.85	18.68	按1970年不变价格计算
8 林业产值	亿元	0.98	1.30	按1970年不变价格计算
9 牧业产值	亿元	5.84	5.31	按1970年不变价格计算
10 副业产值	亿元	4.31	4.11	按1970年不变价格计算
11 渔业产值	亿元	0.03	0.03	按1970年不变价格计算
12 工业总产值	亿元	42.60	44.03	按1970年不变价格计算
13 轻工业产值	亿元	17.78	15.99	按1970年不变价格计算
14 重工业产值	亿元	24.82	28.04	按1970年不变价格计算
15 四、地方财政收入	亿元	5.369	6.04	
16 五、财政支出	亿元	12.52	12.14	
17 六、基本建设投资总额	亿元	8.85	9.31	全民所有制 49
18 七、货物周转量	39亿吨公里	102.7	99.6	铁路、公路、水运 50
19 八、社会商品零售额	38亿元	34.00	30.02	包括农民对非农业居民零售 51
20 九、工农业主要产品产量				
21 原煤	40万吨	1416	1398.32	
22 发电量	41亿度	43.55	45.17	
23 钢	40万吨	8.60	8.66	
24 棉布	42万米	7033.00	6401.95	
25 粮食	40万吨	567.36	648.35	
26 棉花	43吨	620.65	487.25	
27 烤烟	44万担	238.51	111.15	
28 油料	万担	679.28	311.79	
29 猪牛羊肉	40万吨	31.62	26.67	
30 十、各级学校在校学生	37万人	512.35	524.82	
31 大学生	万人	1.81	1.71	
32 中学生	万人	96.58	110.24	
33 小学生	万人	403.49	404.19	
34 十一、医疗卫生				
35 医院床位数	45万张	4.47	4.11	
36 专业卫生人员	37万人	6.89	6.38	不包括赤脚医生 52

Key:

1. Unit
2. Notes
3. 1. Population
4. 2. Workers
5. 3. Gross output value of industry and agriculture
6.     Gross output value of agriculture
7.     Output value of agriculture
8.     Output value of forestry
9.     Output value of animal husbandry
10.    Output values of sideline production
11.    Output value of fisheries
12.    Gross output value of industry
13.    Output of light industry
14.    Output of heavy industry
15. 4. Regional government revenues
16. 5. Expenditures
17. 6. Total investment in capital construction
18. 7. Volume of goods
19. 8. Social commodity retail sales
20. 9. Output of major industrial and agricultural products
21.     Raw coal
22.     Electricity
23.     Steel
24.     Cotton cloth
25.     Grain
26.     Cotton
27.     Flue-cured tobacco
28.     Oil-bearing crops
29.     Pork, beef and mutton (or goat)
30. 10. Number of students in school
31.     College
32.     Secondary
33.     Primary
34. 11. Medical and health
35.     Number of hospital beds
36.     Health technicians
37. 10,000 people
38. 100 million yuan
39. 100 million ton kilometers
40. 10,000 tons
41. 100 million kWh
42. 10,000 meters
43. tons
44. 10,000 dan
45. 10,000 units
46. Year-end figure
47. Ownership by all the people and by collectives
48. Figured at 1970 constant prices
49. Ownership by all the people
50. Railroad, road and water
51. Including peasant sales to nonfarm residents
52. Not including barefoot doctors

# MAJOR ECONOMIC INDICATORS FOR HEBEI PROVINCE

Beijing ZHONGGUO JINGJI NIANJIAN (1982) [ALMANAC OF CHINA'S ECONOMY (1982)]  
in Chinese 1982 p VI 21

[Table]

项 目	单 位	1980年	1981年	备 注
3 一、年末人口数	万 人	5167.6	5256.2	
4 二、年末职工人数	万 人	476.8	496.7	
5 三、工农业总产值	亿 元	299.51	301.46	按1970年不变价格计算 42
6 农业总产值	亿 元	87.25	92.1	按1970年不变价格计算
7 工业总产值	亿 元	212.26	209.36	按1970年不变价格计算
8 轻工业产值	亿 元	96.22	104.21	按1970年不变价格计算
9 重工业产值	亿 元	116.04	105.15	按1970年不变价格计算
10 四、财政收入	亿 元	35.02	34.1	
11 五、基本建设投资	亿 元	26.91	19.57	全民所有制 43
12 六、货物周转量	35 亿吨公里	37.49	32.63	
13 七、社会商品零售额	亿 元	102.4	111.95	包括农民对非农业居民零售 44
14 八、工农业主要产品产量				
15 原 煤	36 万 吨	5353	5235	
16 发 电 量	37 亿 度	196.36	199	
17 钢	36 万 吨	190.39	183	
18 生 铁	万 吨	251.57	216	
19 日用陶瓷	38 亿 件	3.2	3.3	
20 水 泥	36 万 吨	549.82	536	
21 平板玻璃	39 万 标箱	389.7	489	
22 棉 布	40 万 米	90000	100000	
23 粮 食	36 万 吨	1522.46	1575	
24 棉 花	万 吨	24.72	22	
25 油 料	万 吨	45.14	46.5	
26 猪牛羊肉	万 吨	42.11	47.83	
27 九、各级学校在校学生人数				
28 大 学 生	万 人	4.15	4.50	
29 中 学 生	万 人	325	282.7	普通中学 45
30 小 学 生	万 人	735	720.3	
31 十、医院床位数	万 张	9.6	9.8	
32 专业卫生技术人员	万 人	15.2	16.2	不包括赤脚医生 46

Key:

1. Unit
2. Notes
3. 1. Population (year-end)
4. 2. Workers (year-end)
5. 3. Gross output value of industry and agriculture
6.     Gross output value of agriculture
7.     Gross output value of industry
8.         Output value of light industry
9.         Output value of heavy industry
10. 4. Regional government revenues
11. 5. Investment in capital construction
12. 6. Volume of goods circulated
13. 7. Social commodity retail sales
14. 8. Output of major industrial and agricultural products
15.     Raw coal
16.     Electricity
17.     Steel
18.     Pig iron
19.     Ceramics used in daily life
20.     Cement
21.     Plate glass
22.     Cotton cloth
23.     Grain
24.     Cotton
25.     Oil-bearing crops
26.     Pork, beef, and mutton or goat
27. 9. Number of students in school
28.     College
29.     Secondary
30.     Primary
31. 10. Number of hospital beds
32.     Health technicians
33. 10,000 people
34. 100 million yuan
35. 100 million ton kilometers
36. 10,000 tons
37. 100 million kWh
38. 100 million units
39. 10,000 standard cases
40. 10,000 meters
41. 10,000 units
42. Figured at 1970 constant prices
43. Ownership by all the people
44. Including peasant sales to nonfarm residents
45. Ordinary middle schools
46. Not including barefoot doctors

CS0: 4006/259

# MAJOR ECONOMIC INDICATORS FOR HEILONGJIANG PROVINCE

Beijing ZHONGGUO JINGJI NIANJIAN (1982) [ALMANAC OF CHINA'S ECONOMY (1982)]  
in Chinese 1982 p VI 58

[Table]

项 目	单 位	1980年	1981年	备 注
3 一、人口数 (年底数)	29 万 人	3,204	3,239	年末收 37
4 二、职工人数 (年底数)	万 人	629.9	672.0	全民和集体所有制 38
5 三、工农业总产值	30 万 元	286.4	291.6	按1970年不变价格计算 39
6 农副总产值	万 元	64.5	64.0	按1970年不变价格计算
7 工业总产值	万 元	221.9	227.6	按1970年不变价格计算
8 轻工业产值	万 元	73.6	84.3	按1970年不变价格计算
9 重工业产值	万 元	148.2	143.2	按1970年不变价格计算
10 四、地方财政收入	万 元	17.1	15.6	按1970年不变价格计算
11 五、基本建设投资	万 元	28.3	24.5	全民所有制 40
12 六、货物周转量	32 亿吨公里	437.3		各种运输不包括石油管道运 41
13 七、社会商品零售额	31 亿 元	94.1	105.5	包括农民对非农业居民零售 42
14 八、工农业主要产品产量				
15 原 煤	33 万 吨	4,244.6	4,174.0	
16 发 电 量	34 亿 度	129.1	136.0	
17 钢	33 万 吨	52.5	47.4	
18 棉 布	35 万 米	17,904	19,000	
19 粮 食	33 万 吨	1,462.4	1,250	
20 棉 花	万 吨			
21 油 料	万 吨	23.89	44.40	
22 猪牛羊肉	万 吨	36.96	32.67	(或存栏头数) 43
23 九、各级学校在校学生人数	29 万 人	761.05	741.73	
24 大学生	万 人	4.36	4.48	
25 中学生	万 人	246.79	219.12	包括农中、职业中学 44
26 小学生	万 人	500.26	509.04	
27 十、医院床位数	36 万 张	9.33	10.58	
28 专业卫生技术人员	万 人	13.34	14.03	不包括赤脚医生 45

Key:

1. Unit
2. Notes
3. 1. Population (year-end)
4. 2. Workers (year-end)
5. 3. Gross output value of industry and agriculture
6.     Gross output value of agriculture
7.     Gross output value of industry
8.     Output value of light industry
9.     Output value of heavy industry
10. 4. Regional government revenues
11. 5. Investment in capital construction
12. 6. Volume of goods circulated
13. 7. Social commodity retail sales
14. 8. Output of major industrial and agricultural products
15.     Raw coal
16.     Electricity
17.     Steel
18.     Cotton cloth
19.     Grain
20.     Cotton
21.     Oil-bearing crops
22.     Pork, beef, and mutton or goat
23. 9. Number of students in schools
24.     College
25.     Secondary
26.     Primary
27. 10. Number of hospital beds
28.     Health technicians
29. 10,000 people
30. 10,000 yuan
31. 100 million yuan
32. 100 million ton kilometers
33. 10,000 tons
34. 100 million kWh
35. 10,000 meters
36. 10,000 units
37. Year-end figure
38. Ownership by all the people and by the collectives
39. Figured at 1970 constant prices
40. Ownership by all the people
41. Using all forms of transportation except oil pipelines
42. Including peasant sales to nonfarm residents
43. (or number of head in inventory)
44. Including agricultural and vocational middle schools
45. Not including barefoot doctors

CSO: 4006/259

# MAJOR ECONOMIC INDICATORS FOR HENAN PROVINCE

Beijing ZHONGGUO JINGJI NIANJIAN (1982) [ALMANAC OF CHINA'S ECONOMY (1982)]  
in Chinese 1982 p VI 116

[Table]

	1 单 位	1980年	1981年	备 2 注
3 一、人口数 (年底数)	29万人	7,285	7,397	
4 二、职工人数 "	万人	399	407.10	全民和集体所有制 36
5 三、工农业总产值	30亿元	294.60	316.70	按1970年不变价格计算 37
6 农业总产值	亿元	110.80	121.30	按1970年不变价格计算
7 工业总产值	亿元	183.80	195.40	按1970年不变价格计算
8 轻工业产值	亿元	94.30	108.20	按1970年不变价格计算
9 重工业产值	亿元	89.50	87.20	按1970年不变价格计算
10 四、地方财政收入	亿元	31.90	34.20	按1970年不变价格计算
11 五、基本建设投资	亿元	18.38	18.97	全民所有制 38
12 六、货物周转量	31 亿吨公里	547.70	563.50	各种运输工具 39
13 七、社会商品零售额	30 亿元	121.90	135.20	包括农民对非农业居民零售 40
14 八、工农业主要产品产量				
15 原 煤	32 万吨	5,625	5,825	
16 发电量	33 亿度	160	171	
17 钢	32 万吨	64.5	55.80	
18 棉 布	34 万米	90,600	99,200	
19 粮 食	32 万吨	429.7亿斤	462.9亿斤	
20 棉 花	万吨	8.12亿斤	7.10亿斤	
21 油 料	万吨	9.2亿斤	11.17亿斤	
22 猪牛羊肉	万吨			(存栏头数) 41
23 九、各级学校在校学生人数	29 万人	1,624	1,527.13	
24 大学生	万人	4.50	4.18	
25 中学生	万人	487	412.3	
26 小学生	万人	1,133	1,110.65	
27 十、医院床位数	35 万张	11.92	12.48	
28 专业卫生技术人员	万人	14.48	16.31	不包括赤脚医生 42



Key:

1. Units
2. Notes
3. Population (year-end)
4. Workers
5. 1. Gross output value of industry and agriculture
6.     Gross output value of agriculture
7.     Gross output value of industry
8.         Output value of light industry
9.         Output value of heavy industry
10. 4. Regional government revenues
11. 5. Investment in capital construction
12. 6. Volume of goods circulated
13. 7. Social commodity retail sales
14. 8. Output of major industrial and agricultural products
15.     Raw coal
16.     Electricity
17.     Steel
18.     Cotton cloth
19.     Grain
20.     Cotton
21.     Oil-bearing crops
22.     Pork, beef and mutton or goat
23. 9. Number of students in schools
24.     College
25.     Secondary
26.     Primary
27. 10. Number of hospital beds
28.     Health technicians
29. 10,000 persons
30. 100 million yuan
31. 100 million ton kilometers
32. 10,000 tons
33. 100 million kWh
34. 10,000 meters
35. 10,000 units
36. Ownership by all the people and by collectives
37. Figured at 1970 constant prices
38. Ownership by all the people
39. Using all forms of transportation
40. Including peasant sales to nonfarm residents
41. (Number of head in inventory)
42. Not including barefoot doctors

CSO: 4006/259

# MAJOR ECONOMIC INDICATORS FOR HUBEI PROVINCE

Beijing ZHONGGUO JINGJI NIANJIAN (1982) [ALMANAC OF CHINA'S ECONOMY (1982)]  
in Chinese 1982 pp VI 123-124

[Table]

项 目	单 位	1980年	1981年	备 注
3 一、人口数 (年底数)	29万人	4,684.45	4,740.34	年末数 36
4 二、职工人数 (年底数)	万人	504.32	530.92	全民和集体所有制 37
5 三、工农业总产值	30亿元	308.10	336.77	按1970年不变价格计算 38
6 农业总产值	亿元	84.05	89.97	按1970年不变价格计算
7 工业总产值	亿元	224.05	246.80	按1970年不变价格计算
8 轻工业产值	亿元	106.97	128.69	按1970年不变价格计算
9 重工业产值	亿元	117.08	118.11	按1970年不变价格计算
10 四、地方财政收入	亿元	34.01	36.86	
11 五、基本建设投资	亿元	31.59	29.51	全民所有制 39
12 六、货物周转量	31亿吨公里	306.86	333.04	各种运输工具 40
13 七、社会商品零售额	30亿元	100.55	107.89	包括农民对非农业居民零售 41
14 八、工农业主要产品产量				
15 原煤	32万吨	383.52	434.12	
16 发电量	33亿度	131	137.16	
17 钢	32万吨	363.74	342.33	
18 棉布	34万米	106,200	112,800	
19 粮食	32万吨	1,536.4	1,706.75	
20 棉花	万吨	31.63	35.27	
21 油料	万吨	20.58	39.29	
22 猪牛羊肉	万吨	55.4	53.96	
23 九、各级学校在校学生人数	29万人	1,081.92	1,019.49	注: 1980年、1981年中学生数不含各类中等专业42
24 大学生	万人	6.53	7.41	学校人数, 1980年中等专业学校人数为22.32
25 中学生	万人	319.55	281.77	万人, 1981年中等专业学校人数为13.96万人
26 小学生	万人	755.84	730.31	
27 十、医院床位数	35万张	12.59	12.94	
28 专业卫生技术人员	29万人	15.59	16.75	不包括赤脚医生 43

Key:

1. Units
2. Notes
3. 1. Population (year-end)
4. 2. Workers (year-end)
5. 3. Gross output value of industry and agriculture
6.     Gross output value of agriculture
7.     Gross output value of industry
8.         Output value of light industry
9.         Output value of heavy industry
10. 4. Regional government revenues
11. 5. Investment in capital construction
12. 6. Volume of goods circulated
13. 7. Social commodity retail sales
14. 8. Output of major industrial and agricultural products
15.     Raw coal
16.     Electricity
17.     Steel
18.     Cotton cloth
19.     Grain
20.     Cotton
21.     Oil-bearing crops
22.     Pork, beef, mutton or goat
23. 9. Number of students in schools
24.     College
25.     Secondary
26.     Primary
27. 10. Number of hospital beds
28.     Health technicians
29. 10,000 people
30. 100 million yuan
31. 100 million ton kilometers
32. 10,000 tons
33. 100 million kWh
34. 10,000 meters
35. 10,000 units
36. Year-end figure
37. Ownership by all the people and by collectives
38. Figured at 1970 constant prices
39. Ownership by all the people
40. Using all forms of transportation
41. Including peasant sales to nonfarm residents
42. Note: The number of students for 1980 and 1981 does not include students in secondary vocational schools. The number of students in secondary vocational schools in 1980 was 223,200; the number of students in secondary vocational schools in 1981 was 139,600.
43. Not including barefoot doctors

# MAJOR ECONOMIC INDICATORS FOR HUNAN PROVINCE

Beijing ZHONGGUO JINGJI NIANJIAN (1982) [ALMANAC OF CHINA'S ECONOMY (1982)]  
in Chinese 1982 p VI 130

[Table]

	1 单 位	1980年	1981年	2 备 注
3 一、人口数	29 万人	5,280.95	5,360.05	年末数 36
4 二、职工人数 (年底数)	万人	400.16	426.88	全民和集体所有制 37
5 三、工农业总产值	30 亿元	261.54	273.80	按1970年不变价格计算 38
6 农业总产值	亿元	93.13	98.09	按1970年不变价格计算
7 工业总产值	亿元	168.41	175.71	按1970年不变价格计算
8 轻工业产值	亿元	70.77	81.05	按1970年不变价格计算
9 重工业产值	亿元	97.64	94.66	按1970年不变价格计算 39
10 四、地方财政收入	亿元	19.92	20.37	不包括代中央收的工商税和企业基本折旧基金。
11 五、基本建设投资	亿元	15.53	12.92	全民所有制 40
12 六、货物周转量	31 亿吨公里	302.08	304.75	各种运输工具 41
13 七、社会商品零售额	30 亿元	95.51	104.18	包括农民对非农业居民零售 42
14 八、工农业主要产品产量				
15 原 煤	32 万吨	1,512.35	1,494.14	不包括社队小窑煤的产量 43
16 发电量	33 亿度	118.67	122.36	
17 钢	32 万吨	69.47	73.09	
18 棉 布 (混合数)	34 亿米	3.89	4.16	包括化纤布 44
19 粮 食	32 万吨	2,124.80	2,170.65	
20 棉 花	万吨	9.62	9.38	
21 油 料	万吨	19.28	35.75	
22 猪牛羊肉	万吨	92.51	99.72	(或存栏头数) 45
23 九、各级学校在校学生人数	29 万人			
24 大学生	万人	5.45	5.47	为普通高等学校在校学生数 46
25 中学生	万人	281.77	251.95	为普通中学在校学生数 47
26 小学生	万人	832.24	830.48	
27 十、医院床位数	35 万张	12.68	12.45	
28 专业卫生技术人员	29 万人	13.16	13.96	不包括赤脚医生 48

Key:

1. Unit
2. Notes
3. 1. Population
4. 2. Workers (year-end)
5. 3. Gross output value of industry and agriculture
6.     Gross output value of agriculture
7.     Gross output value of industry
8.         Output value of light industry
9.         Output value of heavy industry
10. 4. Regional government revenues
11. 5. Investment in capital construction
12. 6. Volume of goods circulated
13. 7. Social commodity retail sales
14. 8. Output of major industrial and agricultural products
15.     Raw coal
16.     Electricity
17.     Steel
18.     Cotton cloth (mixed amount)
19.     Grain
20.     Cotton
21.     Oil-bearing crops
22.     Pork, beef and mutton or goat
23. 9. Number of students in schools
24.     College
25.     Secondary
26.     Primary
27. 10. Number of hospital beds
28.     Health technicians
29. 10,000 people
30. 100 million yuan
31. 100 million ton kilometers
32. 10,000 tons
33. 100 million kWh
34. 100 million meters
35. 10,000 units
36. Year-end figure
37. Ownership by all the people and by collectives
38. Figured at 1970 constant prices
39. Exclusive of industrial and commercial taxes collected for the central government, and basic depreciation funds for enterprises
40. Ownership by all the people
41. Using all forms of transportation
42. Including peasant sales to nonfarm residents
43. Exclusive of output of small commune and brigade coal mines
44. Exclusive of chemical fiber cloth
45. (or number of head in inventory)
46. Number of students in ordinary institutions of higher education
47. Number of students in ordinary secondary schools
48. Exclusive of barefoot doctors

# MAJOR ECONOMIC INDICATORS FOR JIANGSU PROVINCE

Beijing ZHONGGUO JINGJI NIANJIAN (1982) [ALMANAC OF CHINA'S ECONOMY (1982)]  
in Chinese 1982 p VI 72

[Table]

项 目	1 单 位	1980年	1981年	2 备 注
3 一、人口数 (年底数)	32 万人	5.938	6.010	年末收 40
4 二、职工人数 (年底数)	万人	644.15	674.82	全民和集体所有制 41
5 三、工农业总产值	33 亿元	604.38	654.40	按1970年不变价格计算 42
6 农业总产值	亿元	146.93	160.4	按1970年不变价格计算
7 工业总产值	亿元	457.45	494	按1970年不变价格计算
8 轻工业产值	亿元	249.88	290.4	按1970年不变价格计算
9 重工业产值	亿元	207.57	203.6	按1970年不变价格计算
10 四、地方财政收入	亿元	62.45	63.04	按1970年不变价格计算
11 五、基本建设投资	亿元	26.15	17.76	全民所有制 43
12 六、货物周转量	34 亿吨公里	105.01	111.57	包括公路和水运 44
13 七、社会商品零售额	33 亿元	154.48	168	包括农民对非农业居民零售 45
14 八、工农业主要产品产量				
15 原 煤	35 万吨	1.690	1736.9	
16 发电量	36 亿度	156.32	169.9	
17 钢	35 万吨	68.17	62.08	
18 棉 布	37 万米	1,797.00	1,917.57	
19 粮 食	35 万吨	2,357.25	2,511.65	
20 棉 花	万吨	41.64	56.35	
21 油 料	万吨	32.76	64.10	
22 猪牛羊肉	万吨			(或存栏头数) 46
23 九、各级学校在校学生人数	32 万人			
24 大学生	万人	8.25	8.26	
25 中学生	万人	320.49	294.09	普通中学 47
26 小学生	万人	836.90	785.93	
27 十、医院床位数	38 万张	11.62	11.96	
28 卫生技术人员	万人	15.03	16.23	包括医院、门诊部、疗养院等卫生技术人员 不包括赤脚医生 48
29 猪存栏头数	39 万头	2,088.75	1,935.18	
30 大牲畜头数	万头	112.24	107.36	
31 羊	万头	545.73	529.65	

Key:

1. Unit
2. Notes
3. 1. Population (year-end)
4. 2. Workers (year-end)
5. 3. Gross output value of industry and agriculture
6.     Gross output value of agriculture
7.     Gross output value of industry
8.         Output value of light industry
9.         Output value of heavy industry
10. 4. Regional government revenues
11. 5. Investment in capital construction
12. 6. Volume of goods circulated
13. 7. Social commodity retail sales
14. 8. Output of major industrial and agricultural products
15.     Raw coal
16.     Electricity
17.     Steel
18.     Cotton cloth
19.     Grain
20.     Cotton
21.     Oil-bearing crops
22.     Pork, beef, and mutton or goat
23. 9. Number of students in schools
24.     College
25.     Secondary
26.     Primary
27. 10. Number of hospital beds
28.     Health technicians
29. Number of hogs in inventory
30. Number of large livestock animals in inventory
31. Sheep and goats
32. 10,000 people
33. 100 million yuan
34. 100 million ton kilometers
35. 10,000 tons
36. 100 million kWh
37. 10,000 meters
38. 10,000 units
39. 10,000 head
40. Year-end figure
41. Ownership by all the people and by collectives
42. Figured at 1970 constant prices
43. Ownership by all the people
44. Using all forms of transportation
45. Including peasant sales to nonfarm residents
46. (or head in inventory)
47. Ordinary middle school
48. Including technicians in hospitals, outpatient departments and clinics,  
but not counting barefoot doctors

# MAJOR ECONOMIC INDICATORS FOR JIANGXI PROVINCE

Beijing ZHONGGUO JINGJI NIANJIAN (1982) [ALMANAC OF CHINA'S ECONOMY (1982)]  
in Chinese 1982 p VI 103

[Table]

	单 1 位	1980年	1981年	备 2 注
3 一、人口数 (年底数)	31 万人	3,270.19	3,303.92	
4 二、职工人数 (年底数)	万人	286.74	301.85	
5 其中: 全民所有制	万人	233.04	242.15	
6 集体所有制	万人	53.70	59.70	
7 三、工农业总产值	32 亿元	138.84	146.23	按1970年不变价格计算 38
8 其中: 农业总产值	亿元	36.1	56.02	按1970年不变价格计算
9 工业总产值	亿元	85.74	90.21	按1970年不变价格计算
10 轻工业产值	亿元	40.99	46.67	按1970年不变价格计算
11 重工业产值	亿元	44.75	43.59	按1970年不变价格计算
12 四、地方财政收入	亿元	12.69	12.81	按1970年不变价格计算
13 五、基本建设投资	亿元	9.22	6.08	全民所有制 39
14 六、货物周转量	33 亿吨公里	22.42	23.53	各种运输工具 40
15 七、社会商品零售额	32 亿元	52.31	58.76	包括农民对非农业居民零售 41
16 八、工农业主要产品产量				
17 原 煤	34 万吨	1,490.31	1,553.13	
18 发电量	35 亿度	57.21	59.86	
19 钢	34 万吨	38.76	42.71	
20 棉 布	36 万米	30011	32491	
21 粮 食	34 万吨	1,240.05	1,268.5	
22 棉 花	万吨	4.3	4.69	
23 油 料	万吨	67.8	104.69	
24 猪牛羊肉	万吨	37.06	39.6	
25 九、各级学校在校学生人数	31 万人	687.72	681.50	
26 其中: 大学生	万人	3.56	3.78	
27 中学生	万人	154.86	145.96	
28 小学生	万人	529.3	531.75	
29 十、医院床位数	37 万张	6.97	7.86	
30 专业卫生技术人员	31 万人	7.90	9.08	不包括赤脚医生 42



Key:

1. Unit
2. Notes
3. 1. Population (year-end)
4. 2. Workers (year-end)
5. Including: Ownership by all the people
6. Collective ownership
7. 3. Gross output value of industry and agriculture
8. Including: Gross output value of agriculture
9. Gross output value of industry
10. Output value of light industry
11. Output value of heavy industry
12. 4. Regional government revenues
13. 5. Investment in capital construction
14. 6. Volume of goods circulated
15. 7. Social commodity retail sales
16. 8. Output of major industrial and agricultural products
17. Raw coal
18. Electricity
19. Steel
20. Cotton cloth
21. Grain
22. Cotton
23. Oil-bearing crops
24. Pork, beef and mutton or goat
25. 9. Number of students in schools
26. College
27. Secondary
28. Primary
29. 10. Number of hospital beds
30. Health technicians
31. 10,000 people
32. 100 million yuan
33. 100 million ton kilometers
34. 10,000 tons
35. 100 million kWh
36. 10,000 meters
37. 10,000 units
38. Figured at 1970 constant prices
39. Ownership by all the people
40. Using all forms of transportation
41. Including peasant sales to nonfarm residents
42. Exclusive of barefoot doctors

CSO: 4006/259

# MAJOR ECONOMIC INDICATORS FOR LIAONING PROVINCE

Beijing ZHONGGUO JINGJI NIANJIAN (1982) [ALMANAC OF CHINA'S ECONOMY (1982)]  
in Chinese 1982 p VI 43

[Table]

项 目	单 位	1980年	1981年	2 1981年为 1980年%
3 一、人口数 (年底数)	29 万人	3,486.9	3,534.8	101.4
4 二、职工人数 (年底数)	万人	762.7	815.5	106.8
5 三、工农业总产值	30 亿元	533.3	536.7	100.6
6 农业总产值	亿元	81.8	85.3	104.3
7 工业总产值	亿元	451.4	451.4	100.0
8 轻工业产值	亿元	139.6	162.7	116.5
9 重工业产值	亿元	311.9	288.7	92.6
10 四、地方财政收入	亿元	86.1	77.7	90.3
11 五、基本建设投资	亿元	32.54	26.98	82.9
12 六、货物周转量	31亿吨公里	1,150.7	1,162.1	101.0
13 七、社会商品零售额	30 亿元	116.5	131.5	112.5
14 八、工农业主要产品产量				
15 原 煤	32 万吨	3,733	3,370.7	90.3
16 发 电 量	33 亿度	2,990	279.8	93.5
17 钢	32 万吨	904.6	872.9	96.5
18 棉 布	34 万米	60,742	63,490	104.6
19 粮 食	35 亿斤	244.3	232.1	95.0
20 棉 花	36 万担	42.7	44.0	103.1
21 油 料	万担	565.1	612.2	108.3
22 猪牛羊肉	32 万吨	42.9	49.1	114.4
23 九、各级学校在校学生	29 万人	730.9	684.8	93.7
24 大 学 生	万人	6.3	7.5	119.0
25 中 学 生	万人	282.2	244.0	86.5
26 小 学 生	万人	442.4	433.3	97.9
27 十、医院床位数	37 万张	12.1	12.5	103.3
28 专业卫生技术人员	29 万人	15.5	16.8	108.4

Key:

1. Unit
2. 1981 as a percent of 1980
3. 1. Population (year-end)
4. 2. Workers (year-end)
5. 3. Gross output value of industry and agriculture
6.     Gross output value of agriculture
7.     Gross output value of industry
8.     Output value of light industry
9.     Output value of heavy industry
10. 4. Regional government revenues
11. 5. Investment in capital construction
12. 6. Volume of goods circulated
13. 7. Social commodity retail sales
14. 8. Output of major industrial and agricultural products
15.     Raw coal
16.     Electricity
17.     Steel
18.     Cotton cloth
19.     Grain
20.     Cotton
21.     Oil-bearing crops
22.     Pork, beef and mutton or goat
23. 9. Number of students in schools
24.     College
25.     Secondary
26.     Primary
27. 10. Number of hospital beds
28.     Health technicians
29. 10,000 people
30. 100 million yuan
31. 100 million ton kilometers
32. 10,000 tons
33. 100 million kWh
34. 10,000 meters
35. 100 million jin
36. 10,000 dan
37. 10,000 units

CSO: 4006/259

# MAJOR ECONOMIC INDICATORS FOR NINGXIA-HUI AUTONOMOUS REGION

Beijing ZHONGGUO JINGJI NIANJIAN (1982) [ALMANAC OF CHINA'S ECONOMY (1982)]  
in Chinese 1982 p VI 181

[Table]

	单 1 位	1980年	1981年	备 2 注
3 一、人口数 (年底数)	29 万人	373.7	383.4	年末收 38
4 二、职工人数 (年底数)	万人	47.57	48.75	全民和集体所有制 39
5 三、工农业总产值	30 亿元	19.02	17.35	按1970年不变价格计算 40
6 农业总产值	亿元	5.35	5.68	按1970年不变价格计算
7 工业总产值	亿元	13.67	11.67	按1970年不变价格计算
8 轻工业产值	亿元	3.67	3.69	按1970年不变价格计算
9 重工业产值	亿元	10.00	7.98	按1970年不变价格计算
10 四、地方财政收入	万元	19.495	13.692	按1970年不变价格计算
11 五、基本建设投资	万元	30.409	20.143	全民所有制 41
12 六、货物周转量	31 亿吨公里	45.10	40.67	各种运输工具 (包括铁、公路) 42
13 七、社会商品零售额	30 万元	78.495	84.585	包括农民对非农业居民零售 43
14 八、工农业主要产品产量				
15 原 煤	32 万吨	971	952	
16 发 电 量	33 亿度	19.43	18.27	
17 钢	32 万吨	0.72	0.41	
18 棉 布	34 万米	1.503	1.226	
19 粮 食	35 亿斤	24.07	25.25	24.07 亿斤, 25.25 亿斤 44
20 棉 花	亿斤	—	—	
21 油 料	36 万斤	7.196	7.547	
22 猪牛羊肉	万斤	3.794	4.040	
23 九、各级学校在校学生人数	29 万人			
24 大学生	万人	0.42	0.52	
25 中学生	万人	22.37	20.67	80不包括中专在校学生 0.82万人 45
				81不包括中专在校学生 0.45万人 46
26 小学生	万人	58.37	55.53	
27 十、医院床位数	37 万张	0.79	0.82	
28 专业卫生技术人员	29 万人	1.27	1.35	不包括赤脚医生 47

Key:

1. Unit
2. Notes
3. 1. Population (year-end)
4. 2. Workers (year-end)
5. 3. Gross output value of industry and agriculture
6.     Gross output value of agriculture
7.     Gross output value of industry
8.         Output value of light industry
9.         Output value of heavy industry
10. 4. Regional government revenues
11. 5. Investment in capital construction
12. 6. Volume of goods circulated
13. 7. Social commodity retail sales
14. 8. Output of major industrial and agricultural products
15.     Raw coal
16.     Electricity
17.     Steel
18.     Cotton cloth
19.     Grain
20.     Cotton
21.     Oil-bearing crops
22.     Pork, beef and mutton or goat
23. 9. Number of students in schools
24.     College
25.     Secondary
26.     Primary
27. 10. Number of hospital beds
28.     Health technicians
29. 10,000 people
30. 100 million yuan
31. 100 million ton kilometers
32. 10,000 tons
33. 100 million kWh
34. 10,000 meters
35. 100 million jin
36. 10,000 jin
37. 10,000 units
38. Year-end figure
39. Ownership by all the people and by collectives
40. Figured at 1970 constant prices
41. Ownership by all the people
42. Using all forms of transportation (including railroads and highways)
43. Including peasant sales to nonfarm residents
44. 2.407 billion jin, 2.525 billion jin
45. Exclusive of 8,200 students in vocational secondary schools in 1980
46. Exclusive of 4,500 students in vocational secondary schools in 1981
47. Exclusive of barefoot doctors

CS0: 4006/259

# MAJOR ECONOMIC INDICATORS FOR QINGHAI PROVINCE

Beijing ZHONGGUO JINGJI NIANJIAN (1982) [ALMANAC OF CHINA'S ECONOMY (1982)]  
in Chinese 1982 pp VI 176-VI 177

[Table]

	单 1 位	1980年	1981年	备 2 注
3 一、人口数	万28人	376.9	381.6	年末数 36
4 二、职工人数	万 人	53.76	55.54	全民和集体所有制 37
5 三、工农业总产值	亿29元	19.47	17.52	按1970年不变价格计算 38
6 农业总产值	亿 元	6.48	6.08	按1970年不变价格计算
7 工业总产值	亿 元	12.99	11.44	按1970年不变价格计算 (省计划范围)
8 轻工业产值	亿 元	4.7	4.68	按1970年不变价格计算 (省计划范围)
9 重工业产值	亿 元	8.29	6.76	按1970年不变价格计算 (省计划范围)
10 四、地方财政收入	亿 元	1.6	1.1	按1970年不变价格计算
11 五、基本建设投资	亿 元	6.9	5.8	全民所有制 39
12 六、货物周转量	30亿吨公里	3.8	3.0	公路运输, 不包括铁路运输 40
13 七、社会商品零售额	亿29元	9.2	9.9	包括农民对非农业居民零售 41
14 八、工农业主要产品产量				
15 原 煤	万31吨	215.44	190.93	
16 发电量	亿32度	8.22	7.72	
17 钢	万31吨	17.92	17.34	
18 棉 布	万33米	1.878	1.915	
19 粮 食	万31吨	95.6	80	
20 油 料	万 吨	.7	6.3	
21 猪牛羊存栏数	34万头只	2,234.97	2,253.99	
22 九、各级学校在校学生人数	万28人	78.80	74.85	包括中等专业技术学校、聋哑学校 42
23 大学生	万 人	0.42	0.53	
24 中学生	万 人	19.92	19.44	
25 小学生	万 人	57.5	54.07	
26 十、医院床位数	万35张	1.05	1.14	全省卫生机构增加380张 43
27 卫生技术人员	万 人	1.51	1.69	不包括赤脚医生 44

Key:

1. Unit
2. Notes
3. 1. Population
4. 2. Workers
5. 3. Gross output value of industry and agriculture
6.     Gross output value of agriculture
7.     Gross output value of industry
8.         Output value of light industry
9.         Output value of heavy industry
10. 4. Regional government revenues
11. 5. Investment in capital construction
12. 6. Volume of goods circulated
13. 7. Social commodity retail sales
14. 8. Output of major industrial and agricultural products
15.     Raw coal
16.     Electricity
17.     Steel
18.     Cotton cloth
19.     Grain
20.     Oil-bearing crops
21.     Hogs, cattle, sheep, and goats in inventory
22. 9. Number of students in schools
23.     College
24.     Secondary
25.     Primary
26. 10. Number of hospital beds
27.     Health technicians
28. 10,000 people
29. 100 million yuan
30. 100 million ton kilometers
31. 10,000 tons
32. 100 million kWh
33. 10,000 meters
34. 10,000 head
35. 10,000 units
36. Year-end figure
37. Ownership by all the people and by collectives
38. Figured at 1970 constant prices (within the provincial plan)
39. Ownership by all the people
40. Highway transportation, does not include railway transportation
41. Including peasant sales to nonfarm residents
42. Includes midlevel specialized technical schools and schools for deaf mutes.
43. 380 bed increase province-wide for all health units
44. Exclusive of barefoot doctors

CSO: 4006/259

# MAJOR ECONOMIC INDICATORS FOR SHAANXI PROVINCE

Beijing ZHONGGUO JINGJI NIANJIAN (1982) [ALMANAC OF CHINA'S ECONOMY (1982)]  
in Chinese 1982 p VI 169

[Table]

项 目	单 位	1980年	1981年	备 注
3 一、人口数	29 万人	2.831	2.865	
4 二、职工人数	万人	282.1	297.1	
5 三、工农业总产值	30 亿元	142.73	143.05	
6 农业总产值	亿元	35.56	36.75	(按1970
7 工业总产值	亿元	107.17	106.3	年不变价 38
8 轻工业产值	亿元	51.91	56.57	格计算)
9 重工业产值	亿元	55.26	49.73	
10 四、地方财政收入	亿元	15.81	13.39	
11 五、基本建设投资额	亿元	20.52	13.34	
12 六、货物周转量	31 亿吨公里	190.23	174.09	
13 七、社会商品零售总额	30 亿元	51.25	54.8	
14 八、工农业主要产品产量				
15 原 煤	32 万吨	1.792	1.845	
16 发电量	33 亿度	79.14	75.11	
17 钢	32 万吨	24.49	21.39	
18 棉 布	34 亿米	6.58	6.84	
19 粮 食	35 亿斤	151.42	150	
20 棉 花	36 万担	161.69	125	
21 油 料	万担	219.44	336.14	
22 猪牛羊肉	32 万吨	23.4	25.5	
23 九、各级学校在校学生人数	万人 29			
24 大学生	万人	5.32	6.32	
25 中学生	万人	180.85	161.1	
26 小学生	万人	452.14	437.31	
27 十、医院床位数	37 万张	6.08	6.37	
28 专业卫生技术人员	29 万人	8.05	8.84	



Key:

1. Unit
2. Notes
3. 1. Population
4. 2. Workers
5. 3. Gross output value of industry and agriculture
6.     Gross output value of agriculture
7.     Gross output value of industry
8.         Output value of light industry
9.         Output value of heavy industry
10. 4. Regional government revenues
11. 5. Investment in capital construction
12. 6. Volume of goods circulated
13. 7. Social commodity retail sales
14. 8. Output of major industrial and agricultural products
15.     Raw coal
16.     Electricity
17.     Steel
18.     Cotton cloth
19.     Grain
20.     Cotton
21.     Oil-bearing crops
22.     Pork, beef, and mutton or goat
23. 9. Number of students in schools
24.     College
25.     Secondary
26.     Primary
27. 10. Number of hospital beds
28.     Health technicians
29. 10,000 persons
30. 100 million yuan
31. 100 million ton kilometers
32. 10,000 tons
33. 100 million kWh
34. 10,000 meters
35. 100 million jin
36. 10,000 dan
37. 10,000 units
38. (Figured at 1970 constant prices)

CSO: 4006/259

# MAJOR ECONOMIC INDICATORS FOR SHANDONG PROVINCE

Beijing ZHONGGUO JINGJI NIANJIAN (1982) [ALMANAC OF CHINA'S ECONOMY (1982)]  
in Chinese 1982 p VI 109

[Table]

项 目	单 位	1980年	1981年	备 注
3 一、全省总人口	万 35人	7296.4	7394.8	年末人数 43
4 农业人口	万 人	6605.4	6658.6	
5 非农业人口	万 人	691	736.2	
6 二、全省职工总人数	万 人	514	539.6	
7 全民所有制	万 人	389.9	410.6	
8 集体所有制	万 人	124.1	129	
9 三、工农业总产值	亿 36元	456.9	476	按1970年不变价格计算 44
10 农业总产值	亿 元	134.7	140.2	按1970年不变价格计算
11 工业总产值	亿 元	322.3	335.8	按1970年不变价格计算
12 轻工业总产值	亿 元	164.5	189.1	按1970年不变价格计算
13 重工业总产值	亿 元	157.8	146.7	不包括东濮油田数 45
14 四、地方财政收入	亿 元	23.52	24.94	1981年系快报数 46
15 五、基本建设投资	亿 元	26.95	18.08	全民所有制 47
16 六、货物运输周转量	37 亿吨公里	313.3	319.4	包括铁路、公路、水运 48
17 七、社会商品零售额	亿 36元	146.9	168.3	包括农民对非农业居民零售 49
18 八、工农业主要产品产量				
19 生 铁	万 38吨	141.5	118.4	
20 钢	万 吨	90.1	86.6	
21 原 煤	万 吨	4290.5	4130.5	
22 发 电 量	亿 39度	186	194.5	
23 机 床	40 台	7859	5710	
24 棉 布	万 41米	108700	117400	
25 粮 食	万 38吨	2384	2312.5	
26 棉 花	万 吨	53.7	67.5	
27 花 生	万 吨	140.4	138.9	
28 猪 牛 羊 肉	万 吨	90	96.2	
29 九、各级学校在校学生人数				
30 高 等 学 校	万 35人	5.14	5.96	
31 中 等 学 校	万 人	419.1	367.8	
32 小 学	万 人	1041.7	1017.6	
33 十、医院床位数	万 42张	11.7	11.9	
34 专业卫生技术人员	万 35人	16.9	17.5	

Key:

1. Unit
2. Notes
3. 1. Province's population
4.     Agricultural population
5.     Nonagricultural population
6. 2. Province's workers
7.     Ownership by all the people
8.     Collective ownership
9. 3. Gross output value of industry and agriculture
10.     Gross output value of agriculture
11.     Gross output value of industry
12.     Output value of light industry
13.     Output value of heavy industry
14. 4. Regional government revenues
15. 5. Investment in capital construction
16. 6. Volume of goods circulated
17. 7. Social commodity retail sales
18. 8. Output of major industrial and agricultural products
19.     Pig iron
20.     Steel
21.     Raw coal
22.     Electricity
23.     Machine tools
24.     Cotton cloth
25.     Grain
26.     Cotton
27.     Peanuts
28.     Pork, beef and mutton or goat
29. 9. Number of students in schools
30.     College
31.     Secondary
32.     Primary
33. 10. Number of hospital units
34.     Health technicians
35. 10,000 people
36. 100 million yuan
37. 100 million ton kilometers
38. 10,000 tons
39. 100 million kWh
40. Units
41. 10,000 meters
42. 10,000 units
43. Year-end figure
44. Figured at 1970 constant prices
45. Exclusive of Dongpu oilfield figures
46. 1981 figures are wall bulletin figures
47. Ownership by all the people
48. Including by: railroad, road, and water
49. Including peasant sales to nonfarm residents

CSO: 4006/259

# MAJOR ECONOMIC INDICATORS FOR SICHUAN PROVINCE

Beijing ZHONGGUO JINGJI NIANJIAN (1982) [ALMANAC OF CHINA'S ECONOMY (1982)]  
in Chinese 1982 p VI 147

[Table]

	单 1 位	1980年	1981年	备 2 注
3 1. 人口数	万人 32	9,819.59	9,924.03	年末数 40
4 2. 职工人数 (年底数)	万人	719.84	744.50	全民和集体所有制 41
5 3. 工农业总产值	亿元 33	401.49	408.87	按1970年不变价格计算 42
6 农业总产值	亿元	138.64	140.76	按1970年不变价格计算
7 工业总产值	亿元	262.85	268.11	按1970年不变价格计算
8 轻工业产值	亿元	120.05	134.94	按1970年不变价格计算
9 重工业产值	亿元	142.80	133.11	按1970年不变价格计算
10 4. 地方财政收入	亿元	34.62	31.51	按1970年不变价格计算
11 5. 基本建设投资	亿元	28.60	19.40	全民所有制 43
12 6. 货物周转量	亿吨公里 34	256.66	*256.00	各种运输工具 44
13 7. 社会商品零售额	亿元 33	151.9	165.5	包括农民对非农业居民零售6.3亿和7.6亿 45
14 8. 工农业主要产品产量				
15 原煤	万吨 35	3,898.2	3,939.8	
16 发电量	亿度 36	163.7	164.1	
17 钢	万吨 35	329.0	302.5	
18 棉布	万米 37	63,490	66,500	
19 粮食	万吨 35	3,261	3,295	
20 棉花	万吨	9.46	8.67	
21 油料	万吨	71.89	97.50	
22 猪牛羊肉	万吨	171.50	188.87	
23 9. 各级学校在校学生人数		2,048.27	1,989.68	
24 大学生	万人 32	7.74	8.70	
25 其中研究生	人 38	763	879	
26 中学生	万人	444.93	401.86	
27 小学生	万人	1,575.85	1,562.78	
28 中专生	万人	12.34	10.58	
29 技工学校学生	万人	7.41	5.76	
30 10. 医院床位数	万张 39	19.59	* 19.70	全省各种医疗单位 46
31 专业卫生技术人员	万人 32	24.48	* 25.00	不包括赤脚医生 47

48注: 有“\*”为预计数。

Key:

1. Unit
2. Notes
3. 1. Population
4. 2. Workers (year-end)
5. 3. Gross output value of industry and agriculture
6.     Gross output value of agriculture
7.     Gross output value of industry
8.         Output value of light industry
9.         Output value of heavy industry
10. 4. Regional government revenues
11. 5. Investment in capital construction
12. 6. Volume of goods circulated
13. 7. Social commodity retail sales
14. 8. Output of major industrial and agricultural products
15.     Raw coal
16.     Electricity
17.     Steel
18.     Cotton cloth
19.     Grain
20.     Cloth
21.     Oil-bearing crops
22.     Pork, beef, and mutton or goat
23. 9. Number of students in schools
24.     College
25.     Including graduate students
26.     Secondary
27.     Primary
28.     Vocational secondary
29.     Technical schools
30. 10. Number of hospital beds
31.     Health technicians
32. 10,000 people
33. 100 million yuan
34. 100 million ton kilometers
35. 10,000 tons
36. 100 million kWh
37. 10,000 meters
38. Individuals
39. 10,000 units
40. Year-end figure
41. Ownership by all the people and by collectives
42. Figured at 1970 constant prices
43. Ownership by all the people
44. Using all forms of transportation
45. Including peasant sales to nonfarm residents of 630 million and 760 million yuan
46. All medical units, province-wide
47. Exclusive of barefoot doctors
48. Note: \*denotes estimated figure

CSO: 4006/259

# MAJOR ECONOMIC INDICATORS FOR THE TIBETAN AUTONOMOUS REGION

Beijing ZHONGGUO JINGJI NIANJIAN (1982) [ALMANAC OF CHINA'S ECONOMY (1982)]  
in Chinese p VI 166

[Table]

	单 1 位	1980年	1981年	备 2 注	
3 一、人口数 (年底数)	26 万人	185.27	185.90	年末收	32
4 二、职工人数 (年底数)	万人	19.33	17.42	全民和集体所有制	33
5 三、工农业总产值	27 亿元	6.05	5.92	按1970年不变价格计算	34
6 农业总产值	亿元	4.51	4.87	按1970年不变价格计算	
7 工业总产值	亿元	1.53	1.05	按1970年不变价格计算	
8 轻工业产值	亿元	0.50	0.45	按1970年不变价格计算	
9 重工业产值	亿元	1.03	0.60	按1970年不变价格计算	
10 四、地方财政收入	亿元	-5.22	-4.92	按1970年不变价格计算	
11 五、基本建设投资	亿元	1.71	1.04	全民所有制	35
12 六、货物周转量	28 亿吨公里	2.73	2.55	各种运输工具	36
13 七、社会商品零售额	27 亿元	3.61	3.66	不包括农民对非农业居民零售	37
14 八、工农业主要产品产量					
15 原 煤	29 万吨	2.98	2.25		
16 发电量	30 亿度	1.75	1.72		
17 粮 食	29 万吨	50.05	48.35		
18 油 料	万吨	1.08	1.19		
19 猪牛羊肉	万吨	4.75	5.69		
20 九、各级学校在校学生人数	26 万人	26.46	21.38		
21 大学生	万人	0.149	0.152		
22 中学生	万人	2.23	1.92		
23 小学生	万人	24.08	19.31		
24 十、医院床位数	31 万张	0.43	0.45		
25 专业卫生技术人员	万人	0.36	0.39	不包括赤脚医生	38

Key:

1. Unit
2. Notes
3. 1. Population (year-end)
4. 2. Workers (year-end)
5. 3. Gross output value of industry and agriculture
6.     Gross output value of agriculture
7.     Gross output value of industry
8.         Output value of light industry
9.         Output value of heavy industry
10. 4. Regional government revenues
11. 5. Investment in capital construction
12. 6. Volume of goods circulated
13. 7. Social commodity retail sales
14. 8. Output of major industrial and agricultural products
15.     Raw coal
16.     Electricity
17.     Grain
18.     Oil-bearing crops
19.     Pork, beef, and mutton or goat
20. 9. Number of students in school
21.     College
22.     Secondary
23.     Primary
24. 10. Number of hospital beds
25.     Health technicians
26. 10,000 people
27. 100 million yuan
28. 100 million ton kilometers
29. 10,000 tons
30. 100 million kWh
31. 10,000 units
32. Year-end figure
33. Ownership by all the people and by collectives
34. Figured at 1970 constant prices
35. Ownership by all the people
36. Using all forms of transportation
37. Exclusive of peasant sales to nonfarm residents
38. Not including barefoot doctors

CSO: 4006/259

# MAJOR ECONOMIC INDICATORS FOR XINJIANG-UIGHUR AUTONOMOUS REGION

Beijing ZHONGGUO JINGJI NIANJIAN (1982) [ALMANAC OF CHINA'S ECONOMY (1982)]  
in Chinese 1982 pp VI 187-VI 188

[Table]

	单 1 位	1980年	1981年	备 2 注
3 一、人口数 (年底数)	29 万人	1,283.24	1,303.05	年末数 40
4 二、职工人数 (年底数)	万人	241.79	253.11	全民和集体所有制 41
5 三、工农业总产值	30 亿元	58.19	63.06	按1970年不变价格计算 42
6 农业总产值	亿元	23.3	26.12	按1970年不变价格计算
7 工业总产值	亿元	34.89	36.94	按1970年不变价格计算
8 轻工业产值	亿 元	15.1	17.18	按1970年不变价格计算
9 重工业产值	亿 元	19.79	19.76	按1970年不变价格计算
10 四、地方财政收入	万 元	40,309	13,623	注: 1981年石油局上划中央, 财政收入减去了石油局收入 43
11 五、基本建设投资	亿 元	17.8819	11.4779	全民所有制 44
12 六、货物周转量	32 亿吨公里			各种运输工具 45
13 七、社会商品零售额	亿 元	32.3634	36.9587	包括农民对非农业居民零售 46
14 八、工农业主要产品产量				
15 原 煤	万 吨	1,136.84	1,010.88	
16 发 电 量	亿 度	23.58	25.21	
17 钢	万 吨	10.74	10.30	
18 棉 布	万 米	16,931	17,800	
19 粮 食	亿 斤	77.23	78.0	
20 棉 花	万 担	158.41	227.20	
21 油 料	万 担	351.79	421.41	
22 猪牛羊肉	万 吨	12	13.16	(或存栏头数) 47
23 九、各级学校在校学生人数	万 人			
24 大 学 生	38 人	14,242	15,047	
25 中 学 生	人	866,939	847,599	
26 小 学 生	万 人	205.55	201.05	
27 十、医院床位数	张 39		47621	
28 专业卫生技术人员	人 38	57949	62979	不包括赤脚医生 48



Key:

1. Unit
2. Notes
3. 1. Population (year-end)
4. 2. Workers (year-end)
5. 3. Gross output value of industry and agriculture
6.     Gross output value of agriculture
7.     Gross output value of industry
8.         Output value of light industry
9.         Output value of heavy industry
10. 4. Regional government revenues
11. 5. Investment in capital construction
12. 6. Volume of goods circulated
13. 7. Social commodity retail sales
14. 8. Output of major industrial and agricultural products
15.     Raw coal
16.     Electricity
17.     Steel
18.     Cotton cloth
19.     Grain
20.     Cotton
21.     Oil-bearing crops
22.     Pork, beef, and mutton or goat
23. 9. Number of students in schools
24.     College
25.     Secondary
26.     Primary
27. 10. Number of hospital beds
28.     Health technicians
29. 10,000 people
30. 100 million yuan
31. 10,000 yuan
32. 100 million ton kilometers
33. 10,000 tons
34. 100 million kWh
35. 10,000 meters
36. 100 million jin
37. 10,000 dan
38. Individuals
39. Units
40. Year-end figure
41. Ownership by all the people and the collectives
42. Figured at 1970 constant prices
43. Note: The 1981 Petroleum Bureau apportionment to the Central government  
of revenues reduced the Petroleum Bureau's earnings.
44. Ownership by all the people
45. Using all forms of transportation
46. Including peasant sales to nonfarm residents
47. (or number in inventory)
48. Not including barefoot doctors

CSO: 4006/259

# MAJOR ECONOMIC INDICATORS FOR YUNNAN PROVINCE

Beijing ZHONGGUO JINGJI NIANJIAN (1982) [ALMANAC OF CHINA'S ECONOMY (1982)]  
in Chinese 1982 pp VI 161-VI 162

[Table]

	单 1 位	1980年	1981年	备 2 注
3 一、人口数	29 万人	3173.4	3222.8	年末数 37
4 二、职工人数(年底数)	万人	200.67	202.2	全民 38
5 三、工农业总产值	30 亿元	102.3	110.68	按1970年不变价格计算 39
6 农业总产值	亿元	40.96	44.38	按1970年不变价格计算
7 工业总产值	亿元	61.38	66.3	按1970年不变价格计算
8 轻工业产值	亿元	27.72	32.69	按1970年不变价格计算
9 重工业产值	亿元	33.66	33.6	按1970年不变价格计算
10 四、地方财政收入	亿元	11.64	12.53	按1970年不变价格计算
11 五、基本建设投资	亿元	14	9.05	全民所有制 40
12 六、货物周转量	31 亿吨公里	86.93	64.34	各种运输工具 41
13 七、社会商品零售额	30 亿元	41.23	44.37	包括农民对非农业居民零售 42
14 八、工农业主要产品产量				
15 原 煤	32 万吨	1,174	1,161	
16 发电量	33 亿度	56.2	59.3	
17 钢	32 万吨	46.33	41.37	
18 棉 布	34 万米	13,247	14,509	
19 粮 食	32 万吨	865	915	
20 棉 花	35 万担	2.39		
21 油 料	万担	129.6	214.16	
22 猪牛羊肉	32 万吨	30.91	35.17	(或存栏头数) 43
23 九、各级学校在校学生人数	29 万人	528.15	518.4	
24 大学生	万人	1.8	2	
25 中学生	万人	96.9	86.5	
26 小学生	万人	424.4	425	
27 十、医院床位数	36 张	66,049	67,600	
28 专业卫生技术人员	29 万人	7.14		不包括赤脚医生 44

Key:

1. Unit
2. Notes
3. 1. Population
4. 2. Workers (year-end)
5. 3. Gross output value of industry and agriculture
6.     Gross output value of agriculture
7.     Gross output value of industry
8.     Output value of light industry
9.     Output value of heavy industry
10. 4. Regional government revenues
11. 5. Investment in capital construction
12. 6. Volume of goods circulated
13. 7. Social commodity retail sales
14. 8. Output of major industrial and agricultural products
15.     Raw coal
16.     Electricity
17.     Steel
18.     Cotton cloth
19.     Grain
20.     Cotton
21.     Oil-bearing crops
22.     Pork, beef, and mutton or goat
23. 9. Number of students in schools
24.     College
25.     Secondary
26.     Primary
27. 10. Number of hospital beds
28.     Health technicians
29. 10,000 people
30. 100 million yuan
31. 100 million ton kilometers
32. 10,000 tons
33. 100 million kWh
34. 10,000 meters
35. 10,000 dan
36. Units
37. Year-end figure
38. Ownership by all the people
39. Figured at 1970 constant prices
40. Ownership by all the people
41. Using all forms of transportation
42. Including peasant sales to nonfarm residents
43. (or number of head in inventory)
44. Not including barefoot doctors

CSO: 4006/259

MAJOR ECONOMIC INDICATORS FOR ZHEJIANG PROVINCE

Beijing ZHONGGUO JINGJI NIANJIAN (1982) [ALMANAC OF CHINA'S ECONOMY (1982)]  
in Chinese 1982 p VI 80

[Table]

	单 1 位	1980年	1981年
2 1. 人口数 (年底数)	32 万 人	3.826	3.871
3 2. 职工人数 (年底数)	"	359.7	379.3
4 3. 工农业总产值	33 亿 元	275.43	308.17
5 农业总产值	"	85.07	91.71
6 工业总产值	"	190.36	216.46
7 轻工业产值	"	115.08	138.03
8 重工业产值	"	75.28	78.43
9 4. 地方财政收入	"	30.8	34
10 5. 基本建设投资	"	12.6	9.1
11 6. 货物周转量	34 亿吨公里	64.53	69.27
12 7. 社会商品零售额	33 亿 元	92.64	103.8
13 其中: 农民对居民零售	"	3.24	5.1
14 8. 工农业主要产品产量			
15 原 煤	35 万 吨	143	133
16 发 电 量	36 亿 度	81.4	95.75
17 钢	35 万 吨	39	40
18 棉 布	37 万 米	48,800	51,200
19 粮 食	35 万 吨	1,436	1,419
20 其中: 全民和集体	"	1,383	1,363
21 棉 花	"	8.29	6.8
22 其中: 全民和集体	"	7.73	6.35
23 油 料	"	28.86	40
24 其中: 全民和集体	"	24.43	34.15
25 猪牛羊肉	"	69.77	62.83
26 9. 各级学校在校学生人数	32 万 人	661.11	623.2
27 大 学 生	"	3.76	4.1
28 中 学 生	"	174.93	159.3
29 小 学 生	"	482.42	459.8
30 10. 医院床位数	38 万 张	6.32	6.43
31 专业卫生技术人员	32 万 人	9.14	9.84

Key:

1. Unit
2. 1. Population (year-end)
3. 2. Workers (year-end)
4. 3. Gross output value of industry and agriculture
5.     Gross output value of agriculture
6.     Gross output value of industry
7.         Output value of light industry
8.         Output value of heavy industry
9. 4. Regional government revenues
10. 5. Investment in capital construction
11. 6. Volume of goods circulated
12. 7. Social commodity retail sales
13.     Including: Peasant retail sales to residents
14. 8. Output of major industrial and agricultural products
15.     Raw coal
16.     Electricity
17.     Steel
18.     Cotton cloth
19.     Grain
20.         Including: by all the people and collectives
21.     Cotton
22.         Including: by all the people and collectives
23.     Oil-bearing crops
24.         Including: by all the people and collectives
25.     Pork, beef and mutton or goat
26. 9. Number of students in school
27.     College
28.     Secondary
29.     Primary
30. 10. Number of hospital beds
31.     Health technicians
32. 10,000 people
33. 100 million yuan
34. 100 million ton kilometers
35. 10,000 tons
36. 100 million kWh
37. 10,000 meters
38. 10,000 units

CSO: 4006/259

# MAJOR ECONOMIC INDICATORS FOR SHANGHAI MUNICIPALITY

Beijing ZHONGGUO JINGJI NIANJIAN (1982) [ALMANAC OF CHINA'S ECONOMY (1982)]  
in Chinese 1982 p VI 62

[Table]

项 目	单 位	1980年	1981年	1981年比1980年增长%	备 注
4 一、人口数 (年底数)	46万人	1,146.3	1,162.8	1.4	
5 其中: 市区人口	万人	601.3	613.4	2.0	
6 二、职工人数 (年底数)	万人	446.9	464.5	3.9	全民和集体所有制 53
7 其中: 工业职工	万人	244.3	255.7	4.7	全民和集体所有制
8 三、工农业总产值 (1970年不变价)	47亿元	650.9	676.1	3.7*	
9 农业总产值	亿元	24.7	28.6	15.5	
10 工业总产值	亿元	626.2	647.5	3.3*	
11 轻工业产值	亿元	329.4	361.7	9.6*	
12 重工业产值	亿元	296.8	285.8	- 3.8*	
13 四、地方财政预算内收入	亿元	172.1	171.5	3.1*	
14 五、基本建设投资额	亿元	25.7	30.8	19.7	
15 六、货物周转量	48 亿吨公里	1,486.8	1,547.1	4.1	各种运输工具 54
16 七、社会商品零售额	47亿元	88.2	95.3	9.2*	包括农民对非农业居民零售 55
17 八、工农业主要产品产量					
18 发电量	49亿度	206.4	204.7	- 0.8	
19 钢	50万吨	521.6	506.3	- 2.9	
20 硫 酸	万吨	38.8	36.5	- 5.8	
21 烧 碱	万吨	24.0	23.4	- 2.5	
22 乙 烯	万吨	13.6	13.8	1.8	
23 塑 料	万吨	14.6	15.1	3.3	
24 轮胎外胎	51万条	174.9	154.5	-11.6	
25 机 床	万台	1.69	1.72	1.7	
26 民用钢质船	50万吨	17.3	20.6	19.6	
27 电视机	51万台	75.2	119.9	59.4	
28 照相机	万架	20.7	26.9	30.0	
29 化学纤维	50万吨	15.2	15.7	3.3	
30 棉 纱	万吨	38.2	39.8	4.1	
31 棉 布	52亿米	16.2	16.7	3.0	
32 机制纸及纸板	50万吨	29.6	31.0	4.7	
33 自行车	51万辆	376.1	410.4	9.1	
34 缝纫机	万架	226.5	241.3	6.6	
35 手 表	万只	816.4	930.0	13.9	
36 粮 食	50万吨	186.9	185.4	- 0.8	
37 棉 花	万吨	7.6	7.4	- 2.5	
38 油 料	万吨	9.6	14.7	53.0	
39 猪牛羊肉	万吨	16.9	17.0	0.4	56
40 九、各级学校在校学生人数	46万人	165.0	151.3	- 8.3	包括中专、技工学校等全日制学校
41 其中: 大学生	万人	7.7	9.1	18.8	
42 中学生	万人	62.7	49.9	-20.4	
43 小学生	万人	85.5	83.2	- 2.6	
44 十、医院床位数	51万张	4.9	5.0	1.0	
45 专业卫生技术人员	46万人	9.4	9.6	1.7	不包括赤脚医生 57

58 注:“1981年比1980年增长%”是按各个指标绝对数的细数计算出来的。栏内有\*符号者,系两年统计口径有所变动,是调整为相同口径后再作比较的。

Key:

1. Unit
2. 1981 as a percent of 1980
3. Notes
4. 1. Population (year-end)
5. Including: city population
6. 2. Workers (year-end)
7. Including: industrial workers
8. 3. Gross output value of industry and agriculture (1970 constant prices)
9. Gross output value of agriculture
10. Gross output value of industry
11. Output value of light industry
12. Output value of heavy industry
13. 4. Regional government
14. 5. Investment in capital construction
15. 6. Volume of goods circulated
16. 7. Social commodity retail sales
17. 8. Output of major industrial and agricultural products
18. Electricity
19. Steel
20. Sulfuric acid
21. Caustic soda
22. Ethylene
23. Plastic
24. Tires
25. Machine tools
26. Steel boats for civilian use
27. Television sets
28. Cameras
29. Chemical fibers
30. Cotton yarn
31. Cotton cloth
32. Machine-made paper and paper board
33. Bicycles
34. Sewing machines
35. Wristwatches
36. Grain
37. Cotton
38. Oil-bearing crops
39. Pork, beef, and mutton or goat
40. 9. Number of students in school
41. College
42. Secondary
43. Primary
44. 10. Number of hospital beds
45. Health technicians
46. 10,000 people
47. 100 million yuan
48. 100 million ton kilometers
49. 100 million kWh
50. 10,000 tons
51. 10,000 units
52. 100 million meters
53. Ownership by all the people and by collectives
54. Using all forms of transportation
55. Including peasant sales to nonfarm residents
56. Including day-long vocational and technical schools
57. Not including barefoot doctors
58. Note: The percentage increase between 1980 and 1981 was calculated on the xishu [4798 2422] of the absolute number for each indicator. Columns marked with an asterisk are those in which statistical specifications for 2 years changed, and they were readjusted to common specifications before comparisons were made.

## SELECTED CHINESE ECONOMIC STATISTICAL DATA

Beijing ZHONGGUO JINGJI NIANJIAN (1982) [ALMANAC OF CHINA'S ECONOMY (1982)]  
in Chinese 1982 pp VIII 3-VIII 33

[Article by the State Statistical Bureau]

[Text] 1. These data are divided into four parts as follows:

- (1) Statistical Data on the Chinese Economy Over the Years.
  - (2) 1 July 1980 Data on the Wuxi Municipal Population Survey Pilot Project.
  - (3) Communique on Results Obtained From Carrying Out the 1981 National Economic Plan.
  - (4) Explanation of Major Indicators.
2. These data do not include figures for Taiwan Province.
3. These data verify and revise some previously published figures, and some indicators have been changed as a result of changes in units of calculations or the scope of statistics.
4. For convenience in comparing figures from individual periods, these data include pertinent data from joint public and private enterprises, private enterprises, and handicraft industry units of the 1949-1957 period in figures for units under the ownership of all the people and units under the ownership of collectives.
5. All average annual speeds of growth contained in these data have been figured by the horizontal method.



1. National Economic Statistical Data Over the Years

Units: 10,000 people

Year	Total population (Year-end)	Divided by Sex		Divided by Locale	
		Male	Female	City & Town	Rural
1952	57.482			7.163	50.319
1957	64.653	33.469	31.184	9.949	54.704
1965	72.538	37.128	35.410	10.170	62.368
1978	95.809	49.129	46.680	11.994	83.815
1980	98.255	50.348	47.907	13.413	84.842
1981	99.622	51.081	48.541	13.870	85.752

Note: This table does not include compatriots in Taiwan Province or in Hong Kong and Macao.

## Major National Economic Indicators

Item	Unit	1952	1957	1965	1978	1980	1981
1. 一、年底人口总数	万 人	57,482	64,653	72,538	95,809	98,255	99,622
2. 二、年底社会劳动者人数	万 人	20,729	23,771	28,670	39,856	41,896	43,280
其中：职工人数	万 人	1,603	3,101	4,965	9,499	10,444	10,940
3. 三、工农业总产值	亿 元	827	1,241	1,984	5,690	6,619	6,919
农业总产值	亿 元	484	537	590	1,459	1,627	1,720
工业总产值	亿 元	343	704	1,394	4,231	4,992	5,199
轻工业产值	亿 元	221	374	703	1,806	2,344	2,675
重工业产值	亿 元	122	330	691	2,425	2,648	2,524
4. 四、国民收入	亿 元	589	908	1,387	3,010	3,660	3,880
5. 五、财政收入	亿 元	183.7	310.2	473.3	1,121.1	1,085.2	1,064.3
财政支出	亿 元	176.0	304.2	466.3	1,111.0	1,212.7	1,089.7
6. 六、基本建设投资总额	亿 元	43.6	138.3	170.9	479.6	539.4	427.9
7. 七、铁路货物周转量	亿吨公里	602	1,346	2,698	5,345	5,717	5,712
8. 八、社会商品零售总额	亿 元	276.8	474.2	670.3	1,558.6	2,140	2,350
9. 九、进出口总额（人民币）	亿 元	64.6	104.5	118.4	355.0	563.8	735.3
进口总额	亿 元	37.5	50.0	55.3	187.4	291.4	367.7
出口总额	亿 元	27.1	54.5	63.1	167.6	272.4	367.6
10. 十、主要工农业产品产量							
原 煤	亿 吨	0.66	1.31	2.32	6.18	6.20	6.22
发 电 量	亿 度	73	193	676	2,566	3,006	3,093
原 油	万 吨	44	146	1,131	10,405	10,595	10,122
钢	万 吨	135	535	1,223	3,178	3,712	3,560
布	亿 米	38.3	50.5	62.8	110.3	134.7	142.7
糖	万 吨	45	86	146	227	257	316.6
自 行 车	万 辆	8.0	80.6	183.8	854.0	1,302.4	1,754
缝 纫 机	万 架	6.6	27.8	123.8	486.5	767.8	1,039
手 表	万 只		0.04	100.8	1,351.1	2,215.5	2,872
粮 食	万 吨	16,390	19,505	19,455	30,475	32,052	32,502
棉 花	万 吨	130.4	164.0	209.8	216.7	270.7	296.8
油 料	万 吨	419.3	419.6	362.6	521.8	769.1	1,020.5
猪、牛、羊肉	万 吨	338.5	398.5	551.0	856.3	1,205.5	1,260.9
水 产 品	万 吨	166.6	311.6	298.4	465.6	449.7	460.5

注：1. 本表工农业总产值1952年按1952年不变价格计算，1957年、1965年按1957年不变价格计算，1978年、1980年、1981年按1970年不变价格计算，其余金额指标均按当年价格计算。

2. 1981年工农业总产值按1980年不变价格计算为7,490亿元，其中：农业总产值为2,312亿元，工业总产值为5,178亿元（轻工业总产值2,663亿元，重工业总产值2,515亿元）。

3. 国民收入是农业、工业、建筑业、交通运输业、商业五个物质部门的生产净产值。

4. 社会商品零售总额包括农民对非农业居民零售。

5. 进出口总额，1952~1980年为原外贸部统计数，1981年为海关统计数。

Key:

1. Population (year-end)	10,000 people
2. Workers (year-end)	10,000 people
Including: Staff and workers	10,000 people
3. Gross output value of agriculture and industry	100 million yuan
Gross output value of agriculture	100 million yuan
Gross output value of industry	100 million yuan
Output value of light industry	100 million yuan
Output value of heavy industry	100 million yuan
4. National income	100 million yuan
5. Revenues	100 million yuan
Disbursements	100 million yuan
6. Total investment in capital construction	100 million yuan
7. Volume of goods shipped by rail	100 million ton kilometers
8. Total retail sales of social goods	100 million yuan
9. Total imports and exports (renminbi)	100 million yuan
Total imports	100 million yuan
Total exports	100 million yuan
10. Output of major agricultural and industrial goods	
Raw coal	100 million tons
Electricity	100 million kWh
Crude oil	10,000 tons
Steel	10,000 tons
Cotton cloth	100 million meters
Sugar	10,000 tons
Bicycles	10,000 units
Sewing machines	10,000 units
Wristwatches	10,000 units
Grain	10,000 tons
Cotton	10,000 tons
Oil-bearing crops	10,000 tons
Pork, beef and mutton or goat	10,000 tons
Aquatic products	10,000 tons

- 
- Note: 1. In this table, gross output value of industry and agriculture for 1952 has been figured at 1952 constant prices. 1957 and 1965 gross output values have been figured at 1957 constant prices. 1978, 1980 and 1981 gross output values have been figured at 1970 constant prices. All other fund indicators have been figured at prices for the years given.
2. Gross output value of industry and agriculture for 1981 figured at 1980 constant prices was 749 billion yuan, including a gross output value for agriculture of 231.2 billion yuan, and a gross output value for industry of 517.8 billion yuan (gross output value of light industry being 266.3 billion yuan, and gross output value of heavy industry being 251.5 billion yuan).
3. By national income is meant the net output value of production from the five material sectors of agriculture, industry, communications and transportation, and commerce.
4. Total retail sales of social goods includes peasant retail sales to nonagricultural residents.
5. Total imports and exports for 1952-1980 are statistics from the former Ministry of Foreign Trade, Statistics for 1981 are from Customs.

Major National Economic Indicators  
(Index and Average Speed of Increase)

Item	Index 1952 = 100				1953~1981 Average Percentage Increase
	1957	1965	1980	1981	
1. 一、年底人口总数	112.5	126.2	170.9	173.3	1.9
2. 二、年底社会劳动者人数	114.7	138.3	202.1	208.8	2.6
其中：职工人数	193.5	309.7	651.5	682.5	6.9
3. 三、工农业总产值	167.8	268.3	906.0	946.8	8.1
农业总产值	124.8	137.1	256.1	270.7	3.5
工业总产值	228.6	452.6	1,885.3	1,962.7	10.8
轻工业产值	183.2	344.5	1,256.2	1,433.3	9.6
重工业产值	310.7	650.6	3,033.5	2,890.9	12.3
4. 四、国民收入	153.0	197.5	510.1	525.4	5.9
5. 五、财政收入	168.9	257.7	590.1	579.4	6.2
财政支出	172.8	264.9	689.0	619.1	6.5
6. 六、基本建设投资额	317.2	392.0	1,238.3	981.4	8.2
7. 七、铁路货物周转量	223.6	448.2	949.7	948.8	8.1
8. 八、社会商品零售总额	171.3	242.2	773.1	849.0	7.7
9. 九、进出口总额	161.8	183.3	872.8	1,138.2	8.7
进口总额	133.3	147.5	777.1	980.5	8.2
出口总额	201.1	232.8	1,005.2	1,356.5	9.4
10. 十、主要工农业产品产量					
原    煤	198.5	351.5	939.4	942.4	8.0
发  电  量	264.4	926.0	4,118.0	4,237.0	13.8
原    油	331.8	2,570.5	24,079.5	23,004.5	20.6
钢	396.3	905.9	2,749.6	2,637.0	12.0
布	131.9	164.0	351.7	372.6	4.6
糖	191.1	324.4	571.1	703.6	7.0
自  行  车	1,007.5	2,297.5	16,280.0	21,925.0	20.4
缝  纫  机	421.2	1,875.8	11,633.3	15,742.4	19.1
粮    食	119.0	118.7	195.6	198.3	2.4
棉    花	125.8	160.9	207.6	227.6	2.9
油    料	100.1	86.5	183.4	243.4	3.1
猪、牛、羊肉	117.7	162.8	356.1	372.5	4.6
水  产  品	187.0	179.1	269.9	276.4	3.6

注：工业、农业总产值和国民收入增长速度是按可比价格计算。

Key:

1. Population (year-end)
2. Workers (year-end)  
Including: Staff and workers
3. Gross output value of agriculture and industry  
Gross output value of agriculture  
Gross output value of industry  
Output value of light industry  
Output value of heavy industry
4. National income
5. Revenues  
Disbursements
6. Total investment in capital construction
7. Volume of goods shipped by rail
8. Total retail sales of social goods
9. Total imports and exports (renminbi)  
Total imports  
Total exports
10. Output of major agricultural and industrial goods  
Raw coal  
Electricity  
Crude oil  
Steel  
Cotton cloth  
Sugar  
Bicycles  
Sewing machines  
Grain  
Cotton  
Oil-bearing crops  
Pork, beef and mutton or goat  
Aquatic products

---

Note: Gross output value of industry and agriculture and the speed of increase in national income have been calculated at comparable prices.

## 1981 Average Daily Major Socioeconomic Activities

### 1. Wealth Created Daily Nationally

Gross output value of industry and agriculture (Figured at 1980 constant prices)	2.05 billion yuan
Gross output value of agriculture	630 million yuan
Gross output value of industry	1.42 billion yuan
National income	1.06 billion yuan
Revenues	290 million yuan
Raw coal	17.04 billion tons
Electricity	850 million kWh
Crude oil	2.77 billion tons
Steel	980 million tons
Cotton cloth	39.1 million meters

### 2. Daily National Consumption

Total consumption by urban and rural population	680 million yuan
Per capita consumption	0.68 yuan
Grain	597,000 tons
Pork	30,000 tons
Vegetable oil	8,000 tons
Sugar	11,000 tons
Cotton cloth for use in daily life	28.08 million meters
Bicycles retailed	43,000 units
Sewing machines retailed	25,000 units
Watches retailed	79,000 units
Television sets retailed	17,000 units

### 3. Other Daily Economic Activities Nationally

Passengers carried on all forms of transportation (Not including passengers carried in cities)	9.4 million
Staff and worker housing area completed	266,000 square meters
Books published	15,290 volumes
Magazines published	4 million volumes
Newspapers published	38.55 million copies
Pieces of mail	9.28 million pieces

### 4. National Population Changes and Marriages

Births	48,000 (33 births per minute)
Deaths	17,000 (12 deaths per minute)
Marriages	28,000 couples
Divorces	1,068 couples

## 5. National Daily Urban Economic Activities (1980)

Gross industrial output value (Figured at 1970 constant prices)	1 billion yuan
Sales of consumer goods	200 million yuan
Persons newly employed in cities and towns	25,000 people
Amount of grain retailed	65,000 tons
Amount of pork retailed	6,500 tons
Amount of vegetables retailed	38,200 tons
Fresh eggs retailed	1,100 tons
Passengers carried on public transportation	49.34 million
Garbage hauled	86,000 tons
Nightsoil hauled	45,000 tons

### Number of Workers (Year-end figure)

Units: 10,000 persons

(1) 年 份	(2) 社 会 劳 动 者		(5) 全 民 和 城 镇 集 体 职 工 人 数	(6) 城 镇 个 体 劳 动 者	(7) 农 村 集 体 和 个 体 劳 动 者
	合(3)计	(4)占总人口%			
1952	20,729	36.1	1,603	883	18,243
1957	23,771	36.8	3,101	104	20,566
1965	28,670	39.5	4,965	171	23,534
1978	39,856	41.6	9,499	15	30,342
1980	41,896	42.6	10,444	81	31,371
1981	43,280	43.4	10,940	113	32,227

#### Key:

- (1) Year
- (2) Workers
- (3) Total
- (4) Percent of total
- (5) Workers in enterprises owned by all the people and in city and town collectives
- (6) City and town individual workers
- (7) Rural collective and individual workers

Workers in Individual Sectors Under Ownership of All the People  
(Year-end figures)

Units: 10,000 persons

Item	1952	1957	1965	1978	1980	1981
1. 总 计	1,580.1	2,451.1	3,738.0	7,451.9	8,019.5	8,372.2
2. 工 业	510.0	748.0	1,238.0	3,041.0	3,246.0	3,406.7
3. 建 筑 业	104.8	271.4	383.0	661.4	674.4	669.2
4. 农林水利气象	23.9	112.3	422.0	834.2	805.2	809.5
5. 运输邮电	112.9	166.5	245.0	449.9	479.3	502.3
6. 商业、饮食业、服务业	292.3	488.7	550.0	969.5	1,082.1	1,144.5
7. 科学文教卫生	239.2	327.3	533.0	941.1	1,071.1	1,131.0
8. 城市公用事业	4.1	21.8	44.0	97.3	121.8	131.5
9. 金 融	34.4	36.2	36.0	40.9	62.5	70.8
10. 机关团体	258.5	278.9	287.0	416.6	477.1	506.7

Total Wages for Staff and Workers in All Sectors Under Ownership of All the People

Units: 100 million yuan

Item	1952	1957	1965	1978	1980	1981
1. 总 计	67.5	156.4	235.3	469.0	627.9	660.4
2. 工 业	24.6	50.7	86.4	204.1	269.1	280.6
3. 建 筑 业	5.9	21.7	24.9	48.3	61.5	62.6
4. 农林水利气象	0.9	5.4	18.1	40.6	51.0	52.4
5. 运输邮电	6.2	12.4	18.8	32.5	42.7	44.6
6. 商业、饮食业、服务业	9.5	26.5	31.3	55.3	75.9	81.5
7. 科学文教卫生	9.2	18.3	31.1	52.8	76.8	83.2
8. 城市公用事业	0.3	1.4	3.1	6.2	9.3	10.2
9. 金 融	1.4	2.2	2.3	2.6	4.3	5.2
10. 机关团体	9.5	17.8	19.3	26.6	37.3	40.1

Number of Staff and Workers and Total Wages Under the System of Collective Ownership in Cities and Towns

Item	1965	1978	1980	1981
1. 一、年底人数 (万人)	1,226.6	2,048.0	2,424.8	2,567.7
a. 工 业	505.4	1,215.0	1,428.3	1,495.0
b. 建 筑 业	93.5	174.5	236.5	255.3
c. 农林牧副渔业	72.3	59.2	48.1	52.1
d. 运 输 业	172.6	204.3	215.8	218.9
e. 商业、饮食业、服务业	200.3	211.3	302.1	351.7
f. 文教卫生	117.8	128.4	130.5	129.4
g. 管理部门	6.3	14.2	13.7	13.1
h. 其 它	58.4	41.1	49.8	52.2
2. 二、工资总额 (亿元)		100.2	144.6	160.0



Key: [first table]

1. Total
2. Industry
3. Construction industry
4. Farming, forestry, water conservancy and meteorology
5. Transportation, posts and telegraphs
6. Business, food and beverage industry, and service trades
7. Science, culture, education, health
8. Urban public utilities
9. Banking
10. Official institutions and groups

[second table]

1. Total
2. Industry
3. Construction industry
4. Farming, forestry, water conservancy and meteorology
5. Transportation, posts and telegraphs
6. Business, food and beverage industry and services trades science,
7. Science, culture, education and health
8. Urban public utilities
9. Banking
10. Official institutions and groups

[third table]

1. Number of people at end of year (10,000 people)
  - a. Industry
  - b. Construction industry
  - c. Farming, forestry, animal husbandry, sideline occupations and fishing industry
  - d. Transportation
  - e. Business, food and beverage industry, and service trades
  - f. Culture, education and health
  - g. Management
  - h. Other
2. Total wages (100 million yuan)

Original Value of Fixed Assets of Enterprises Under Ownership of All the People at Year's End

Units: 100 million yuan

Item	1952	1957	1965	1978	1980
1. 总 计	240.6	522.9	1,445.8	4,488.2	5,311.1
2. 其中: 工 业	107.2	272.2	961.0	3,002.2	3,465.2
3. 农 业				126.8	167.5
4. 建 筑 业	1.7	21.7	22.9	72.6	136.4
5. 运输邮电	115.2	182.7	337.9	824.1	943.3
6. 商业、饮食业、服务业	11.5	33.9	91.1	315.8	409.7
7. 物资供销	0.1	1.8	8.8	40.2	47.3
8. 城市公用事业	4.9	10.6	24.1	52.3	65.2
9. 科学文教卫生				23.2	28.6

注: 1. 固定资产原值是指独立核算企业购买和建筑各种固定资产支付的金额。

2. 本表是按管理系统划分, 不是按经济部门划分。下表同。

Fixed Floating Capital in Use at Year's End in Enterprises Under the System of Ownership by All the People

Units: 100 million yuan

Item	1952	1957	1965	1978	1980
1. 总 计	171.7	401.8	915.9	2,853.4	3,222.8
2. 其中: 工 业	33.0	62.9	230.4	959.4	997.0
3. 农 业				122.4	123.9
4. 建 筑 业	3.7	19.5	18.0	38.6	57.6
5. 运输邮电	7.1	9.5	20.7	72.2	69.1
6. 商业、饮食业、服务业	123.2	290.1	493.4	1,300.0	1,509.6
7. 物资供销	4.3	19.4	152.3	326.0	426.8
8. 城市公用事业	0.4	0.4	1.1	4.8	

National Income, Consumption and Accumulations

Item	Units	1952	1957	1965	1978	1980
1. 国民收入	亿 元	589	908	1,387	3,010	3,660
2. 指数 (以1952年为100)	%	100	153.0	197.5	453.2	510.3
3. 按人口平均国民收入	元 / 人	104	142	194	316	375
4. 国民收入使用额	亿 元	607	935	1,347	2,975	3,684
5. 消 费 额	亿 元	477	702	982	1,888	2,519
6. 积 累 额	亿 元	130	233	365	1,087	1,165
7. 积 累 率	%	21.4	24.9	27.1	36.5	31.6

注: 本表除国民收入指数按可比价格计算以外, 其余均按当年价格。国民收入使用额不等于国民收入总额, 是由于进出口差额和统计误差的影响。

Key:

[first table]

1. Total
2. Including: Industry
3. Agriculture
4. Construction industry
5. Transportation, posts and telegraphs
6. Business, food and beverage industry, and service trades
7. Supply and marketing of goods
8. Urban public utilities
9. Science, culture, education and health

Note: 1. Original value of fixed assets means the funds spent by independent accounting enterprises for purchases and construction of fixed assets.  
2. This table is layed out in terms of management systems and not in terms of economic sectors. The same applies to succeeding tables.

[second table]

1. Total
2. Including: Industry
3. Agriculture
4. Construction industry
5. Transportation, posts and telegraphs
6. Business, food and beverage industry, and services trades
7. Goods supply and marketing
8. Urban public utilities

[third table]

- |                                       |                  |
|---------------------------------------|------------------|
| 1. National income                    | 100 million yuan |
| 2. Index (1952=100)                   | Percent          |
| 3. Average per capita national income | Yuan/per capita  |
| 4. National income used               | 100 million yuan |
| 5. Amount consumed                    | 100 million yuan |
| 6. Amount accumulated                 | 100 million yuan |
| 7. Accumulation rate                  | Percent          |

Note: In this table, except for the national income index, which has been figured at comparative prices, all else has been figured at current year prices. National income use figures do not equal the total national income figure because of differences between import and export figures plus statistical errors.

# Development of Rural People's Communes

(1) 年 份	(2) 农村人民公社数(个)	(3) 生产大队数(万个)	(4) 生产队数(万个)	(5) 入社户数(万户)	(6) 入社人口(万人)	平均每个公社 有生产大队 (7)(个)	平均每个大队 有生产队 (8)(个)	平均每个生 产队有人口 (9)(人)
1958	23,630			12,861	56,017			
1965	74,755	64.8	541.2	13,527	59,122	8.7	8.3	109
1978	52,781	69.0	481.6	17,347	80,320	13.1	7.0	167
1980	54,183	71.0	566.2	17,673	81,096	13.1	8.0	143
1981	54,368	71.8	600.4	18,016	81,881	13.2	8.4	136

## Gross Industrial and Agricultural Output Value Indexes (1949 = 100)

(1) 年 份	(2) 工农业总产值	(3) 农业总产值	(4) 工业总产值	(5) 在工业总产值中	
				(6)轻工业总产值	(7)重工业总产值
1949	100.0	100.0	100.0	100.0	100.0
1952	177.5	148.5	245.0	214.6	329.7
1957	297.9	185.3	560.0	393.2	1,024.3
1965	476.3	203.6	1,108.8	739.2	2,144.9
1977	1,231.3	312.8	3,450.7	1,875.0	7,922.2
1978	1,382.7	341.0	3,916.5	2,077.5	9,158.1
1979	1,500.2	370.3	4,249.4	2,276.9	9,863.3
1980	1,608.2	380.3	4,619.1	2,695.8	10,001.4
1981	1,680.6	402.0	4,808.5	3,075.9	9,531.3

注：本表按可比价格计算。

## Output Value of Farming, Forestry, Animal Husbandry, Sideline Occupations and Fisheries

年 (1) 份	农 业 (2) (种植业)	林(3)业	牧(4)业	副 (5) 业		渔(8) 业
				合(6) 计	其中: 队办工业 (7)	
(9)一、绝对数 (亿元)						
1952	346.6	2.9	47.9	18.3		1.3
1957	432.6	9.3	69.0	22.9		2.9
1965	446.8	12.0	82.7	38.0		10.1
1978	988.6	44.4	193.0	212.5	170.1	20.3
1980	1,046.9	49.7	231.0	278.6	236.4	21.0
1981	1,103.1	51.9	245.0	297.8	257.7	21.8
(10)二、占农业总产值%						
1952	83.1	0.7	11.5	4.4		0.3
1957	80.6	1.7	12.9	4.3		0.5
1965	75.8	2.0	14.0	6.5		1.7
1978	67.8	3.0	13.2	14.6	11.7	1.4
1980	64.3	3.1	14.2	17.1	14.5	1.3
1981	64.1	3.0	14.3	17.3	15.0	1.3

注：1. 本表1952、1957、1965年是按1957年不变价格计算，1978年以后按1970年不变价格计算。

2. 1981年农业总产值按1980年不变价格计算为2,312亿元，其中种植业为1,489亿元，林业为95亿元，牧业为357亿元，副业为331亿元(队办工业为279亿元)，渔业为40亿元。

Key:

[first table]

1. Year
2. Number of Rural people's communes (units)
3. Number of production brigades (10,000)
4. Number of production teams (10,000)
5. Number of households entering communes (10,000 households)
6. Number of people entering communes (10,000 people)
7. Average Number of brigades per commune (units)
8. Average number of production teams per brigade (units)
9. Average number of people per production brigade (persons)

[second table]

1. Year
2. Gross output value of industry and agriculture
3. Gross output value of agriculture
4. Gross output value of industry
5. Within gross output value of industry
6. Gross output value of light industry
7. Gross output value of heavy industry

Note: Figures in this table calculated at comparative prices.

[third table]

1. Year
2. Agriculture
3. Forestry
4. Animal husbandry
5. Sideline occupations
6. Total
7. Brigade-operated industries
8. Fisheries
9. 1. Absolute figures (100 million yuan)
10. 2. As percent of gross output value of agriculture

Note: 1. In this table, the years 1952, 1957, and 1965 are calculated at 1957 constant prices. From 1978 onward, calculations are at 1970 constant prices.

2. The 1981 gross output value of agriculture at 1980 constant prices was 231.2 billion yuan. This included 148.9 billion yuan from farming, 9.5 billion yuan from forestry, 35.7 billion yuan from animal husbandry, 33.1 billion yuan from sideline occupations (brigade-operated enterprises providing 27.9 billion yuan), and 4 billion yuan from the fishing industry.

# Outputs of Major Agricultural, Aquatic and Forestry Products

Units: 10,000 tons

Items	1952	1957	1965	1978	1980	1981
1. 粮 食	16,390	19,505	19,455	30,475	32,052	32,502
2. 棉 花	130.4	164.0	209.8	216.7	270.7	296.8
3. 油 料	419.3	419.6	362.6	521.8	769.1	1,020.5
4. 其中: 花 生	231.6	257.1	192.8	237.7	360.1	382.6
5. 油菜籽	93.2	88.8	108.9	186.8	238.4	406.5
6. 芝 麻	48.1	31.3	25.6	32.3	25.9	51.0
7. 黄红麻	30.6	30.1	27.9	108.8	109.9	126.0
8. 桑蚕茧	6.2	6.8	6.7	17.3	25.0	25.2
9. 柞蚕茧	6.1	4.5	3.9	5.4	7.6	5.9
10. 茶 叶	8.3	11.2	10.1	26.8	30.4	34.3
11. 甘 蔗	711.6	1,039.3	1,339.2	2,111.7	2,280.8	2,966.8
12. 甜 菜	47.9	150.1	198.5	270.2	630.6	636.0
13. 烤 烟	22.2	25.6	37.2	105.3	71.7	127.9
14. 水 果	244.3	324.8	324.0	657.0	679.3	780.1
15. 水产品	166.6	311.6	298.4	465.6	449.7	460.5
16. 海水产品	106.0	193.7	201.4	359.8	325.7	323.2
17. 淡水产品	60.6	117.9	97.0	105.8	124.0	137.3
18. 橡 胶		0.02	1.66	10.16	11.29	12.8
19. 油桐籽	43.5	51.8		39.1	30.3	36.0
20. 油茶籽	24.9	49.4	33.2	47.9	49.0	65.4

## Output Indexes for Farm Products, Aquatic Products and Forestry Products (1952=100)

Items	1957	1965	1978	1980	1981
1. 粮 食	119.0	118.7	185.9	195.6	198.3
2. 棉 花	125.8	160.9	166.2	207.6	227.6
3. 油 料	100.1	86.5	124.4	183.4	243.4
4. 其中: 花 生	111.0	83.2	102.6	155.5	165.2
5. 油菜籽	95.3	116.8	200.4	255.8	436.2
6. 芝 麻	65.1	53.2	67.2	53.8	106.0
7. 黄红麻	98.4	91.2	355.6	359.2	411.8
8. 桑蚕茧	109.7	108.1	279.0	403.2	406.5
9. 柞蚕茧	73.8	63.9	88.5	124.6	96.7
10. 茶 叶	134.9	121.7	322.9	366.3	413.3
11. 甘 蔗	146.1	188.2	296.8	320.5	416.9
12. 甜 菜	313.4	414.4	564.1	1,316.5	1,327.8
13. 烤 烟	115.3	167.6	474.3	323.0	576.1
14. 水 果	133.0	132.6	268.9	278.1	319.3
15. 水产品	187.0	179.1	279.5	269.9	276.4
16. 海水产品	182.7	190.0	339.4	307.3	304.9
17. 淡水产品	193.6	160.1	174.6	204.6	226.6
18. 油桐籽	119.1		89.9	69.7	82.8
19. 油茶籽	198.4	133.3	192.4	196.8	262.7

Key:

[first table]

1. Grain
2. Cotton
3. Oil-bearing crops
4.     Peanuts
5.     Rapeseeds
6.     Sesame seeds
7. Jute and ambari hemp
8. Mulberry silkworm cocoons
9. Tussah silkworm cocoons
10. Tea
11. Sugar cane
12. Sugarbeets
13. Flue-cured tobacco
14. Fruit
15. Aquatic products
16.     Marine products
17.     Freshwater products
18. Rubber
19. Tung oil seeds
20. Tea oil seeds

[second table]

1. Grain
2. Cotton
3. Oil-bearing crops
4.     Peanuts
5.     Rapeseeds
6.     Sesame seeds
7. Jute and ambari hemp
8. Mulberry silkworm cocoons
9. Tussah silkworm cocoons
10. Tea
11. Sugar cane
12. Sugarbeets
13. Flue-cured tobacco
14. Fruit
15. Aquatic products
16.     Marine products
17.     Freshwater products
18. Tung oil seeds
19. Tea oil seeds

# Number of Head of Pork and Sheep and Meat Output

年 (1) 份	肥猪出栏 (2) 头数(万头)	猪年底存栏 (3) 头数(万头)	猪牛羊肉 (4) 产量(万吨)	(5) 羊年底存栏头数(万头)		
				食6并	山(7)羊	纆8羊
9. 一、绝对数						
1952	6,545	8,977	338.5	6,178	2,490	3,688
1957	7,131	14,590	398.5	9,858	4,515	5,343
1965	12,167	16,693	551.0	13,903	6,077	7,826
1978	16,110	30,129	856.3	16,994	7,354	9,640
1980	19,861	30,543	1,205.5	18,731	8,068	10,663
1981	19,495	29,370	1,260.9	18,773	7,826	10,947
10. 二、指数 (以1952年为100)						
1957	109.0	162.5	117.7	159.6	181.3	144.9
1965	185.9	186.0	162.8	225.0	244.1	212.2
1978	260.5	335.6	253.0	275.1	295.3	261.4
1980	303.5	340.2	356.1	303.2	324.0	289.1
1981	297.9	327.2	372.5	303.9	314.3	296.8

注: 肥猪出栏头数包括国家收购、集体及社员自宰, 以及国营农场和其它单位自宰的。

## Average Per Hectare Output of Major Farm Products (Figured on Area Sown)

Kilograms/Hectare						
Item	1952	1957	1965	1978	1980	1981
1. 粮 食	1,322	1,460	1,626	2,527	2,752	2,847
2. 其中: 稻 谷	2,411	2,692	2,942	3,978	4,126	4,319
3. 小 麦	732	858	1,021	1,845	1,877	2,094
4. 玉 米	1,341	1,435	1,510	2,803	3,073	3,042
5. 大 豆	815	788	715	1,060	1,097	1,160
6. 薯 类	1,879	2,090	1,776	2,690	2,816	2,689
7. 棉 花	234	284	420	445	550	572
8. 花 生	1,287	1,012	1,042	1,343	1,539	1,548
9. 油菜籽	501	384	598	718	839	1,072
10. 芝 麻	455	332	386	506	333	623
11. 黄红麻	1,937	2,105	2,469	2,641	3,497	4,118
12. 甘 蔗	38,885	38,925	38,154	38,464	47,562	53,799
13. 甜 菜	13,686	9,440	11,608	8,163	14,242	14,589
14. 烤 烟	1,194	721	1,145	1,718	1,807	2,183

## Average Per Capita Output of Grain, Cotton, Oil-bearing Crops, Hogs, and Aquatic Products

年 (1) 份	粮 (2) 食 (公斤/人)	棉 (3) 花 (公斤/人)	油 (4) 料 (公斤/人)	肥 (5) 猪 (头/人)	猪、牛、羊肉 (6) (公斤/人)	水 产 品 (7) (公斤/人)
1952	288	2.29	7.38	0.12	5.95	2.9
1957	306	2.57	6.58	0.11	6.25	4.9
1965	272	2.93	5.07	0.17	7.70	4.2
1978	320	2.28	5.48	0.18	9.00	4.9
1980	328	2.77	7.87	0.20	12.4	4.6
1981	328	3.00	10.24	0.20	12.7	4.7



Key:

[first table]

1. Year
2. Fattened hogs removed from inventory (10,000 head)
3. Number of hogs in inventory at year-end (10,000 head)
4. Pork and mutton (10,000 tons)
5. Number of sheep [or goats] in inventory at year-end (10,000 head)
6. Total
7. Goats
8. Sheep
9. 1. Absolute figures
10. 2. Index (1952=100)

Note: Fattened hogs removed from inventory include those purchased by the state, those butchered by collectives or individual commune members, and those slaughtered by state-owned farms and other units.

[second table]

1. Grain
2. Including: Rice
3. Wheat
4. Corn
5. Soybeans
6. Tubers
7. Cotton
8. Peanuts
9. Rapeseeds
10. Sesame seeds
11. Jute and ambari hemp
12. Sugar cane
13. Sugarbeets
14. Flue-cured tobacco

[third table]

1. Year
2. Grain (kilos per person)
3. Cotton (kilos per person)
4. Oil-bearing crops (kilos per person)
5. Hogs (head per person)
6. Pork, beef and mutton (kilos per person)
7. Aquatic products (kilos per person)

Comparison of Outputs of Major Farm Crops With Highest Pre-Liberation Year

Item	Unit	Highest Pre-Liberation Year		Index (Highest Pre-Liberation Year=100)		
		Year	Output	1949	1952	1981
1. 粮 食	万 吨	1936	15,000	75.5	109.3	216.7
2. 其中: 稻谷	万 吨	1936	5,735	84.8	119.4	251.0
3. 小麦	万 吨	1936	2,330	59.2	77.9	255.9
4. 玉米	万 吨	1936	1,010	155.1	166.8	577.4
5. 大豆	万 吨	1936	1,130	45.1	84.1	82.4
6. 薯类	万 吨	1936	635		257.5	406.2
7. 棉 花	万 吨	1936	84.9	52.4	153.6	349.6
8. 花 生	万 吨	1933	317.1	40.0	73.0	120.7
9. 油菜籽	万 吨	1934	190.7	38.5	48.9	213.2
10. 芝 麻	万 吨	1933	99.1	32.9	48.5	51.5
11. 黄红麻	万 吨	1945	10.9	33.9	280.7	1,156.0
12. 桑蚕茧	万 吨	1931	22.1	14.0	28.5	114.0
13. 柞蚕茧	万 吨	1921	9.4	12.8	64.9	62.8
14. 茶 叶	万 吨	1932	22.5	18.2	36.9	152.4
15. 甘 蔗	万 吨	1940	565.2	46.7	125.9	524.9
16. 甜 菜	万 吨	1939	32.9	58.1	145.6	1,933.1
17. 烤 烟	万 吨	1948	17.9	24.0	124.0	714.5
18. 苹 果	万 吨	1936	12.1		97.5	2,484.1
19. 柑 桔	万 吨	1936	40.1		51.6	198.9
20. 香 蕉	万 吨	1937	10.3		106.8	122.6
21. 大牲畜年底头数	万 头	1935	7,151	83.9	106.9	136.5
22. 牛	万 头	1935	4,827	91.0	117.2	151.9
23. 马	万 头	1935	649	75.1	94.5	169.1
24. 驴	万 头	1935	1,215	78.1	97.2	69.3
25. 骡	万 头	1935	460	32.0	35.6	94.0
26. 猪年底头数	万 头	1934	7,853	73.5	114.3	374.0
27. 羊年底头数	万 头	1937	6,252	67.7	98.8	300.3
28. 水 产 品	万 吨	1936	150	30.0	111.3	307.0

Number of Large Livestock Animals

年 份	(2) 大 牲 畜		(5) 牛	(6) 马	(7) 驴	(8) 骡	(9) 骆驼
	(3) 计	其中(4) 役畜					
10. 一、绝对数 (万头)							
1952	7,646	5,142	5,660.0	613.0	1,180.6	163.7	28.5
1957	8,382	5,368	6,361.2	730.2	1,086.4	167.9	36.5
1965	8,421	4,322	6,695.1	792.1	743.8	144.7	44.8
1978	9,389	5,023	7,072.4	1,124.5	748.1	386.8	57.4
1980	9,525	5,088	7,167.6	1,104.2	774.8	416.6	61.4
1981	9,764	5,471	7,330.1	1,097.2	841.5	432.5	62.8
11. 二、指数 (以1952年为100)							
1957	109.6	104.4	112.4	119.1	92.0	102.6	128.1
1965	110.1	84.1	118.3	129.2	63.0	88.4	157.2
1978	122.8	97.7	125.0	183.4	63.4	236.3	201.4
1980	124.6	98.9	126.6	180.1	65.6	254.5	215.4
1981	127.7	106.4	129.5	179.0	71.3	264.2	220.4

Key:

[first table]

1.	Grain	10,000 tons
2.	Rice	"
3.	Wheat	"
4.	Corn	"
5.	Soybeans	"
6.	Tubers	"
7.	Cotton	"
8.	Peanuts	"
9.	Rapeseeds	"
10.	Sesame seeds	"
11.	Jute and ambari hemp	"
12.	Mulberry silkworm cocoons	"
13.	Tussah silkworm cocoons	"
14.	Tea	"
15.	Sugar cane	"
16.	Sugarbeets	"
17.	Flue-cured tobacco	"
18.	Apples	"
19.	Citrus	"
20.	Bananas	"
21.	Large livestock animals (year-end)	10,000 head
22.	Cattle	"
23.	Horses	"
24.	Mules	"
25.	Donkeys	"
26.	Hogs (year-end)	"
27.	Sheep or goats (year-end)	"
28.	Aquatic products	10,000 tons

[second table]

1.	Year
2.	Large animals
3.	Total
4.	Including: draft animals
5.	Cattle
6.	Horses
7.	Mules
8.	Donkeys
9.	Camels
10.	1. Absolute figures (10,000 head)
11.	2. Index (1952=100)

# Levels of Agricultural Modernization

Item	Unit	1952	1957	1965	1978	1980	1981
1. 当年实际机耕面积	万公顷	13.6	263.6	1,557.9	4,067.0	4,099.0	3,647.7
2. 灌溉面积	万公顷	1,995.9	2,733.9	3,305.5	4,496.5	4,488.8	4,457.4
3. 机电灌溉面积	万公顷	31.7	120.2	809.3	2,489.5	2,531.5	2,523.1
4. 化肥施用量	万吨	7.8	37.3	194.2	884.0	1,269.4	1,334.9
5. 农村小型水电站	个	98	544		82,387	80,319	74,017
6. 发电能力	万千瓦	0.8	2.0		228.4	304.1	336.0
7. 农村用电量	亿度	0.5	1.4	37.1	253.1	320.8	369.9

注: 1. 化肥按折合含氮、磷、钾100%计算。

2. 农村用电量指农村社队生产和生活用电、不包括在农村的全民所有制单位的用电量。

## Numbers of Major Farm Machines at Year's End

Item	Unit	1952	1957	1965	1978	1980	1981
1. 农业机械总动力	万马力	25	165	1,494	15,975	20,049	21,359
2. 大中型拖拉机	混合台	1,307	14,674	72,599	557,358	744,865	792,032
3. 手扶拖拉机	万台			0.4	137.3	187.4	203.7
4. 大中型机引农具	万台			25.8	119.2	136.9	139.0
5. 联合收割机	台	284	1,789	6,704	18,987	27,045	31,268
6. 机动脱粒机	万台			11.4	210.6	249.8	251.7
7. 排灌动力机械	万马力	12.8	56.4	907.4	6,557.5	7,464.5	7,498.3
8. 碾米机、磨面机	万台				270.8	302.5	319.4
9. 轧花机	万台				26.8	26.5	26.4
10. 榨油机	万台				19.7	22.6	23.6
11. 载重汽车	辆		4,084	11,063	73,770	134,745	175,126
12. 畜力胶轮大车	万辆			133.5	248.8	239.8	233.7
13. 手推胶轮车	万辆			875.7	2,963.4	3,517.0	4,126.0
14. 渔业机动船	万马力		10.3	64.0	290.6	351.4	398.7

## Gross Output Value of Major Industrial Sectors (Figured at 1970 Constant Prices)

Units: 100 million yuan

Sector	1978	1979	1980	1981
1. 全国总计	4,231	4,591	4,992	5,199
2. 一、冶金工业	368.91	410.27	430.27	415.40
3. 其中: 黑色金属工业	256.17	287.02	298.89	280.86
4. 二、电力工业	161.42	176.72	188.39	194.09
5. 三、煤炭及炼焦工业	126.66	128.18	124.01	122.05
6. 煤炭工业	116.85	118.08	113.97	112.76
7. 其中: 开采	110.01	116.24	112.97	112.22
8. 炼焦及焦炭化学工业	9.81	10.10	10.04	9.29
9. 四、石油工业	233.29	249.57	252.31	245.37

[table continued p 467]

Key:

[first table]

1. Actual machine-plowed area	10,000 hectares
2. Irrigated area	10,000 hectares
3. Electromechanically irrigated area	10,000 hectares
4. Amount of chemical fertilizer used	10,000 tons
5. Small rural hydropower stations	Units
6. Electricity generation capacity	10,000 kilowatts
7. Amount of rural use of electricity	100 million kWh

Note: 1. Chemical fertilizer calculated at a 100 percent conversion for nitrogen, phosphate and potash  
2. Amount of rural use of electricity means electricity used in production and daily life by rural communes and production brigades. It does not include electricity used by rural units under a system of ownership by all the people.

[second table]

1. Total power of farm machines	Horsepower
2. Large and medium tractors	Mixture
3. Hand tractors	10,000 units
4. Large and medium tractor-drawn farm implements	10,000 units
5. Combine harvesters	Units
6. Powered threshing machines	10,000 units
7. Powered irrigation and drainage machines	10,000 horsepower
8. Rice milling and flour grinding machines	10,000 units
9. Cotton gins	10,000 units
10. Oil pressing machines	10,000 units
11. Trucks	Units
12. Animal-powered rubber-tired vehicles	10,000 units
13. Rubber-tired handcarts	10,000 units
14. Mechanized fishing boats	10,000 horsepower

[third table]

1. National total
2. 1. Metallurgy industry
3. Ferrous metal industries
4. 2. Electric power industry
5. 3. Coal and coking industry
6. Coal industry
7. Including: Mining
8. Coking and coke chemical industry
9. 4. Petroleum industry

[key continued p 468]

[Table continued from p 465]

Units: 100 million yuan				
Sector	1978	1979	1980	1981
10. 其中: 开采	94.80	98.03	102.24	98.74
11. 五、化学工业	524.98	561.84	622.30	651.28
12. 化学矿开采工业	5.00	4.07	4.42	4.84
13. 基本化学原料工业	61.67	72.21	75.78	76.02
14. 化肥农药工业	102.00	106.91	124.63	123.65
15. 有机化学工业	103.01	114.04	123.99	131.76
16. 化学药品工业	65.62	61.78	68.33	78.93
17. 日用化学工业	34.19	38.33	43.82	49.00
18. 橡胶加工工业	84.38	93.32	92.91	84.06
19. 塑料加工工业	69.11	71.18	88.42	103.02
20. 六、机械工业	1,155.46	1,244.84	1,273.62	1,226.17
21. 其中: 农业机械制造工业	115.88	109.13	86.58	67.68
22. 工业设备制造工业	255.41	240.27	224.65	199.45
23. 其中: 轻、纺工业专用设备制造 (包括 纺织、造纸等)	15.51	22.53	28.27	32.55
24. 交通设备制造工业	127.20	145.42	149.55	128.13
25. 其中: 汽车制造	56.59	71.22	81.50	69.67
26. 铁道运输设备制造	16.15	18.16	16.07	14.09
27. 电子工业	159.67	171.56	212.22	229.28
28. 生活用机械制造工业	51.07	60.40	77.38	98.71
29. 生产用金属品工业	174.24	187.13	191.69	180.39
30. 日用金属品工业	62.09	67.68	85.60	97.78
31. 机械设备及金属品修理工业	70.64	75.13	73.59	66.16
32. 七、建筑材料工业	153.91	167.32	181.53	180.87
33. 水泥及水泥制品工业	48.77	60.03	67.59	68.06
34. 砖瓦石灰及其它建筑材料工业	65.56	66.12	71.72	72.62
35. 耐火材料工业	9.48	9.19	10.05	9.96
36. 玻璃工业	11.67	12.78	13.83	12.83
37. 陶瓷工业	5.67	5.88	6.35	6.45
38. 非金属矿工业	12.76	13.32	11.99	10.95
39. 八、森林工业	77.41	84.75	86.65	86.16
40. 其中: 木材采运工业	28.05	29.76	30.16	28.45
41. 九、食品工业	471.71	518.72	567.96	640.23
42. 其中: 粮油工业	163.12	172.37	177.19	198.20
43. 制盐工业	21.26	16.20	19.34	20.47
44. 屠宰及肉类加工工业	58.80	79.32	84.71	88.48
45. 制糖工业	25.23	28.44	29.56	35.80
46. 卷烟工业	63.28	69.48	78.95	94.89
47. 十、纺织、缝纫及皮革工业	653.80	731.87	921.08	1,079.47
48. 纺织工业	529.09	593.06	735.46	868.25
49. 其中: 化学纤维工业	31.29	37.81	53.49	69.59
50. 其中: 合成纤维工业	23.86	29.62	43.06	57.49
51. 缝纫工业	90.79	100.97	134.70	153.43
52. 皮革工业	33.92	37.84	50.92	57.79
53. 十一、造纸及文教用品工业	136.93	156.79	176.20	185.50
54. 其中: 造纸工业	53.84	60.30	64.14	64.02

Key: [continued from p 466]

- 10. Extraction
- 11. 5. Chemical industry
- 12. Chemical deposits extraction industry
- 13. Basic chemical raw materials industry
- 14. Chemical pesticide industry
- 15. Organic chemical industry
- 16. Chemical pharmaceutical industry
- 17. Daily use chemical industry
- 18. Rubber processing industry
- 19. Plastics processing industry
- 20. 6. Machinery industry
- 21. Including: Farm machinery manufacturing industry
- 22. Industrial equipment manufacturing industry
- 23. Including: Manufacture of specialized equipment for  
light and textile industries (including  
textile and paper manufacturing)
- 24. Communications and transportation equipment manufacturing  
industry
- 25. Including: Automobile manufacturing
- 26. Railroad transportation manufacturing industry
- 27. Electronics industry
- 28. Manufacturing industry for machines used in daily life
- 29. Metal products industry for metal products used in production
- 30. Metal products industry for metal products used in daily life
- 31. Machinery and equipment and metal products repair industry
- 32. 7. Construction materials industry
- 33. Cement and cement products industry
- 34. Brick, tile, lime, and other construction materials industry
- 35. Fire-resistant materials industry
- 36. Glass industry
- 37. Porcelain and pottery industry
- 38. Nonmetallic ores industries
- 39. 8. Forest industry
- 40. Including: Timber felling and hauling industry
- 41. 9. Food industry
- 42. Including: Grain and oil industry
- 43. Salt making industry
- 44. Butchering and meat processing industry
- 45. Sugar refining industry
- 46. Cigarette making industry
- 47. 10. Textile, sewing and tanning industry
- 48. Textile industry
- 49. Including: Chemical fiber industry
- 50. Synthetic fiber industry
- 51. Sewing industry
- 52. Leather tanning industry
- 53. 11. Paper making industry and industries making cultural and educational  
items
- 54. Including: Paper making industry

Structure of Gross Output Value of Major Industrial Sectors (National Gross Output Value of Industry=100)

Sector	Percent			
	1978	1979	1980	1981
1. 全 国 总 计	100	100	100	100
2. 一、冶金工业	8.7	8.9	8.6	8.0
3. 其中：黑色金属工业	6.1	6.3	6.0	5.4
4. 二、电力工业	3.8	3.8	3.8	3.7
5. 三、煤炭及炼焦工业	3.0	2.8	2.5	2.3
6. 煤炭工业	2.8	2.6	2.3	2.2
7. 其中：开采	2.6	2.5	2.3	2.2
8. 炼焦及焦炭化学工业	0.2	0.2	0.2	0.2
9. 四、石油工业	5.5	5.4	5.1	4.7
10. 其中：开采	2.2	2.1	2.0	1.9
11. 五、化学工业	12.4	12.2	12.5	12.5
12. 化学矿开采工业	0.1	0.1	0.1	0.1
13. 基本化学原料工业	1.5	1.6	1.5	1.5
14. 化肥农药工业	2.4	2.3	2.5	2.4
15. 有机化学工业	2.4	2.5	2.5	2.5
16. 化学药品工业	1.6	1.4	1.4	1.5
17. 日用化学工业	0.8	0.8	0.9	0.9
18. 橡胶加工工业	2.0	2.0	1.9	1.6
19. 塑料加工工业	1.6	1.5	1.8	2.0
20. 六、机械工业	27.3	27.1	25.5	23.6
21. 其中：农业机械制造业	2.7	2.4	1.7	1.3
22. 工业设备制造业	6.0	5.2	4.5	3.8
23. 其中：轻、纺工业专用设备制造（包括纺织、造纸等）	0.4	0.5	0.6	0.6
24. 交通设备制造业	3.0	3.2	3.0	2.5
25. 其中：汽车制造	1.3	1.6	1.6	1.3
26. 铁道运输设备制造	0.4	0.4	0.3	0.3
27. 电子工业	3.8	3.7	4.3	4.4
28. 生活用机械制造业	1.2	1.3	1.6	1.9
29. 生产用金属品工业	4.1	4.1	3.8	3.5
30. 日用金属品工业	1.5	1.5	1.7	1.9
31. 机械设备及金属品修理工业	1.7	1.6	1.5	1.3
32. 七、建筑材料工业	3.6	3.6	3.6	3.5
33. 水泥及水泥制品工业	1.2	1.3	1.4	1.3
34. 砖瓦石灰及其它建筑材料工业	1.5	1.4	1.4	1.4
35. 耐火材料工业	0.2	0.2	0.2	0.2
36. 玻璃工业	0.3	0.3	0.3	0.3
37. 陶瓷工业	0.1	0.1	0.1	0.1
38. 非金属矿工业	0.3	0.3	0.2	0.2
39. 八、森林工业	1.8	1.9	1.7	1.7
40. 其中：木材采运工业	0.7	0.7	0.6	0.6
41. 九、食品工业	11.2	11.3	11.4	12.3
42. 其中：粮油工业	3.9	3.8	3.6	3.8

[table continued p 471]



Key:

1. National total
2. 1. Metallurgy industry
3. Including: Ferrous metals industry
4. 2. Electric power industry
5. 3. Coal and coke industry
6. Coal industry
7. Including: Mining
8. Coking and coke chemical industry
9. 4. Petroleum industry
10. Including: Extraction
11. 5. Chemical industry
12. Chemical deposits extraction industry
13. Basic chemical raw materials industry
14. Chemical fertilizer and pesticide industry
15. Organic chemistry industry
16. Chemical pharmaceuticals industry
17. Chemical industries for daily life
18. Rubber processing industries
19. Plastics processing industries
20. 6. Machine industry
21. Including: Farm machinery manufacturing industry
22. Industrial equipment manufacturing industry
23. Including: Light and textile industry special equipment  
manufacturing (including textiles and paper  
manufacturing)
24. Communications and transportation equipment manufacturing  
industry
25. Including: Automobile manufacture
26. Railroad transportation equipment manufacture
27. Electronics industries
28. Industries manufacturing machinery used in daily life
29. Industries producing metal products for use in production
30. Industries producing metal products for use in daily life
31. Machinery and equipment and metal products repair industries
32. 7. Construction materials industry
33. Concrete and concrete products industry
34. Bricks, tiles, lime, and other construction materials industry
35. Fire-resistant materials industry
36. Glass industry
37. Porcelain and pottery industry
38. Nonmetallic ores industries
39. 8. Forest industry
40. Including: Timber felling and transportation industry
41. 9. Food industry
42. Including: Grain and oil industry

[key continued p 472]

[Table continued from p 469]

percent

Sector	1978	1979	1980	1981
43. 制盐工业	0.5	0.4	0.4	0.4
44. 屠宰及肉类加工工业	1.4	1.7	1.7	1.7
45. 制糖工业	0.6	0.6	0.6	0.7
46. 卷烟工业	1.5	1.5	1.6	1.8
47. 十、纺织、缝纫及皮革工业	15.4	15.9	18.5	20.8
48. 纺织工业	12.5	12.9	14.7	16.7
49. 其中：化学纤维工业	0.7	0.8	1.1	1.3
50. 其中：合成纤维工业	0.6	0.7	0.9	1.1
51. 缝纫工业	2.1	2.2	2.7	3.0
52. 皮革工业	0.8	0.8	1.0	1.1
53. 十一、造纸及文教用品工业	3.2	3.4	3.5	3.6
54. 其中：造纸工业	1.3	1.3	1.3	1.2

Gross Output Value Indexes of Major Industrial Sectors (1952=100)

Industrial sector	1957	1965	1978	1980	1981
1. 工业总产值	228.6	452.6	1,598.6	1,885.3	1,962.7
2. 其中：冶金工业	359.4	895.6	2,262.9	2,639.6	2,547.8
3. 电力工业	253.5	934.0	3,493.4	4,077.8	4,199.3
4. 煤炭工业	220.5	385.2	990.4	965.9	955.0
5. 石油工业	411.1	2,317.8	13,892.4	15,036.2	14,622.6
6. 化学工业	389.2	1,449.0	7,272.6	7,625.7	9,465.6
7. 其中：化肥农药	632.4	10,164.4	55,330.5	67,590.0	67,056.0
8. 机械工业	366.7	955.9	4,908.8	5,410.5	5,209.6
9. 其中：农业机械	434.5	2,211.4	24,532.9	18,330.9	14,329.3
10. 建筑材料工业	248.5	433.3	1,802.1	2,125.3	2,119.1
11. 森林工业	190.1	186.9	308.4	345.1	343.2
12. 食品工业	185.5	235.4	485.4	584.5	658.7
13. 纺织工业	151.1	232.2	560.1	778.5	919.4
14. 造纸工业	239.5	381.0	795.0	947.3	932.0

注：本表按可比价格计算。

Output of Major Industrial Products

Item	Units	1952	1957	1965	1978	1980	1981
1. 原煤	亿吨	0.66	1.31	2.32	6.18	6.20	6.22
2. 原油	万吨	44	146	1,131	10,405	10,595	10,122
3. 天然气	亿立方米	0.08	0.7	11.0	137.3	142.7	127.4
4. 发电量	亿度	73	193	676	2,566	3,006	3,093
5. 其中：水电	亿度	13	48	104	446	582	656
6. 成品钢材	万吨	106	415	881	2,208	2,716	2,670

[table continued p 473]

Key: [continued from p 470]

- 43. Salt making industry
- 44. Butchering and meat processing industry
- 45. Sugar refining industry
- 46. Cigarette making industry
- 47. 10. Textile, sewing and tanning industries
- 48. Textile industry
- 49. Including: Chemical fiber industry
- 50. Including: Synthetic fiber industry
- 51. Sewing industry
- 52. Leather tanning industry
- 53. 11. Industries making paper, cultural and educational items
- 54. Including: Paper making industry

[center table]

- 1. Gross industrial output value
- 2. Including: Metallurgy industry
- 3. Electric power industry
- 4. Coal industry
- 5. Petroleum industry
- 6. Chemical industry
- 7. Including: Chemical fertilizer and pesticides
- 8. Machinery industry
- 9. Including: Farm machinery
- 10. Construction materials industry
- 11. Forest industry
- 12. Food industry
- 13. Textile industry
- 14. Paper making industry

Note: Table computed at comparative prices

[bottom table]

- |                          |                          |
|--------------------------|--------------------------|
| 1. Raw coal              | 100 million tons         |
| 2. Crude oil             | 10,000 tons              |
| 3. Natural gas           | 100 million cubic meters |
| 4. Electric power        | 100 million kWh          |
| 5. Including: Hydropower | 100 million kWh          |
| 6. Finished steel        | 10,000 tons              |

[key continued p 474]

[Table continued from p 471]

Item	Units	1952	1957	1965	1978	1980	1981
7. 钢	万吨	135	535	1,223	3,178	3,712	3,560
8. 生 铁	万吨	193	594	1,077	3,479	3,802	3,417
9. 机制焦炭	万吨	222	555	1,203	3,238	3,405	3,172
10. 木 材	万立方米	1,233	2,787	3,978	5,162	5,359	4,942
11. 水 泥	万吨	286	686	1,634	6,524	7,986	8,400
12. 平板玻璃	万标准箱	213	462	687	2,004	2,771	3,064
13. 硫 酸	万吨	19.0	63.2	234.0	661.0	764.3	780.7
14. 纯 碱	万吨	19.2	50.6	88.2	132.9	161.3	165.2
15. 烧 碱	万吨	7.9	19.8	55.6	164.0	192.3	192.3
16. 合成氨	万吨	3.8	15.3	148.4	1,183.5	1,497.4	1,483.3
17. 农用化肥	万吨	3.9	15.1	172.6	869.3	1,232.1	1,239.0
18. 其中: 氮肥	万吨	3.9	12.9	103.7	763.9	999.3	985.7
19. 磷肥	万吨		2.2	68.8	103.3	230.8	250.8
20. 化学农药	万吨	0.2	6.5	19.3	53.3	53.7	48.4
21. 塑 料	万吨	0.2	1.3	9.7	67.9	89.8	91.6
22. 轮胎外胎	万条	42	88	232	936	1,146	729
23. 化学药品	万吨	0.01	0.22	1.05	4.07	4.01	3.73
24. 矿山设备	万吨	0.18	5.29	4.00	24.29	16.25	11.49
25. 冶金设备	万吨	0.02	1.38	1.74	6.82	4.10	3.51
26. 石油设备	万吨		0.59	1.29	8.29	5.71	9.77
27. 化工设备	万吨	0.10	0.72	3.42	6.75	6.98	5.46
28. 发电设备	万千瓦	0.6	19.8	68.3	483.8	419.3	139.5
29. 交流电动机	万千瓦	64	146	405	3,195	2,570	2,126
30. 变压器	万千伏	117	420	818	4,862	4,461	2,734
31. 泵	万台	1.4	5.1	15.5	133.1	109.6	115.6
32. 金属切削机床	万台	1.37	2.80	3.96	18.32	13.36	10.26
33. 锻压设备	万台	0.11	0.29	0.75	3.75	4.84	5.16
34. 汽 车	万辆		0.79	4.05	14.91	22.23	17.56
35. 其中: 载重汽车	万辆		0.62	2.65	9.61	13.55	10.83
36. 滚动轴承	万套	118	1,060	3,080	17,932	22,755	21,817
37. 拖拉机	万台			0.96	11.35	9.77	5.28
38. 手扶拖拉机	万台			0.36	32.42	21.79	19.89
39. 谷物联合收割机	台		124	655	4,930	6,025	6,005
40. 内燃机	万马力	4	69	279	2,818	2,539	2,004
41. 其中: 农业排灌用	万马力		26.5	66.3	908.8	340.1	233
42. 机 车	台	20	167	146	521	512	398
43. 货 车	万辆	0.58	0.73	0.29	1.70	1.06	0.88
44. 客 车	辆	6	454	160	784	1,002	1,159
45. 民用钢质船舶	艘	84	646	517	2,220	4,100	4,938
46. 化学纤维	万吨		0.02	5.01	28.46	45.03	52.73
47. 纱	万吨	65.6	84.4	130.0	238.2	292.6	317.0
48. 布	亿米	38.3	50.5	62.8	110.3	134.7	142.7
49. 毛 巾	亿条	2.24	3.68	4.34	9.86	12.62	12.51
50. 袜 子	亿双	3.59	5.83	4.34	8.10	8.52	8.75

[table continued p 475]

Key: [continued from p 472]

7. Steel	10,000 tons
8. Pig iron	10,000 tons
9. Machine made coke	10,000 tons
10. Timber	10,000 cubic meters
11. Cement	10,000 tons
12. Plate glass	10,000 standard cases
13. Sulfuric acid	10,000 tons
14. Sodium carbonate	"
15. Caustic soda	"
16. Synthetic ammonia	"
17. Agricultural chemical fertilizer	"
18. Including: Nitrogenous fertilizer	"
19. Phosphate fertilizer	"
20. Chemical pesticides	"
21. Plastic	"
22. Tires	10,000 units
23. Chemical pharmaceuticals	10,000 tons
24. Mining equipment	"
25. Metallurgy equipment	"
26. Petroleum equipment	"
27. Chemical equipment	"
28. Electricity generating equipment	10,000 kilowatts
29. Alternating current motors	"
30. Transformers	"
31. Pumps	10,000 units
32. Metal cutting machine tools	"
33. Forging equipment	"
34. Automobiles	"
35. Including: Trucks	"
36. Roller bearings	"
37. Tractors	"
38. Hand tractors	"
39. Cereal grain combines	Units
40. Internal combustion engines	10,000 horsepower
41. Including: those used for farm irrigation and drainage	"
42. Locomotives	Units
43. Freight cars	10,000 units
44. Passenger cars	Units
45. Steel boats for civilian use	"
46. Chemical fibers	10,000 tons
47. Yarn	"
48. Cloth	100 million meters
49. Towels	100 million units
50. Trousers	100 million pair

[key continued p 476]

[Table continued from p 473]

Item	Units	1952	1957	1965	1978	1980	1981
51. 毛 线	万吨	0.20	0.57	1.10	3.78	5.73	7.65
52. 呢 绒	万米	423	1,817	4,240	8,885	10,095	11,308
53. 毛 毯	万条	71.7	86.2	242.0	625.0	883.7	1,067.0
54. 麻 袋	亿条	0.67	0.83	1.25	2.90	4.33	4.29
55. 丝	万吨	0.56	0.99	0.91	2.97	3.54	3.74
56. 丝织品	亿米	0.65	1.45	3.42	6.11	7.59	8.35
57. 灯 泡	亿只	0.26	0.69	1.92	7.59	9.46	9.66
58. 合成洗涤剂	万吨			3.0	32.4	39.3	47.8
59. 皂用合成脂肪酸	吨			8,671	59,150	65,132	59,283
60. 肥 皂	万吨	9.7	26.3	31.5	59.6	85.2	93.3
61. 火 柴	万件	911	1,036	1,207	1,887	1,960	2,197
62. 原 盐	万吨	495	828	1,147	1,953	1,728	1,832
63. 糖	万吨	45	86	146	227	257	316.6
64. 卷 烟	万箱	265	446	478	1,182	1,520	1,704
65. 罐 头	万吨	1.25	6.18	12.18	48.81	57.16	68.43
66. 皮 革	万张	330	956	713	2,663	4,145	4,616
67. 皮 鞋	万双	1,200	2,529	1,808	10,053	15,745	20,240
68. 胶 鞋	亿双	0.6	1.3	2.5	3.8	4.1	4.3
69. 服 装	亿件			3.85	6.73	9.45	10.08
70. 机制纸和纸板	万吨	37	91	173	439	535	540
71. 收音机	万部	1.7	35.2	81.5	1,167.7	3,003.8	4,057.2
72. 录音机	万台		0.11	0.46	4.73	74.3	154.6
73. 电视机	万部			0.43	51.73	249.20	539.41
74. 照相机	万架		0.01	1.72	17.89	37.28	62.30
75. 自行车	万辆	8.0	80.6	183.8	854.0	1,302.4	1,754.3
76. 缝纫机	万架	6.6	27.8	123.8	486.5	767.8	1,039.1
77. 手 表	万只		0.04	100.8	1,351.1	2,215.5	2,872

注：木材指运出量，1961年以前为原木产量，1962年以后还包括小规格材。

农用化肥按含氮、磷、钾100%计算。

发电设备包括500千瓦及以上的水轮发电机、汽轮发电机和燃气轮发电机。

交流电动机指功率在0.5千瓦以上的。

纱包括纯棉纱、棉混纺纱和棉型纯化纤纱，不包括棉绒、代用纤维纱和手工纺纱。

布包括纯棉布、棉混纺交织布、纯化纤棉布和棉帆布，不包括代用纤维布、手工织布和帘子布。

丝不包括手工缫丝。

麻袋包括纯麻纺、麻化纤交织、纯化纤和代用纤维原料纺麻袋，不包括手织麻袋和再生麻袋。1981年以后不包括聚烯烃编织袋。

#### Output Indexes of Major Industrial Products (1952=100)

Item	1957	1965	1978	1980	1981
1. 原 煤	198.5	351.5	936.4	939.4	942.4
2. 原 油	331.8	2,570.5	23,647.7	24,079.5	23,004.5
3. 发电量	264.4	926.0	3,515.1	4,117.8	4,237.0
4. 其中：水电	369.2	800.0	3,430.8	4,476.9	5,046.2

[table continued p 477]

Key: [continued from p 474]

51. Knitting wool	10,000 tons
52. Woolen fabric	10,000 meters
53. Woolen blankets	10,000 units
54. Burlap bags	100 million units
55. Silk	10,000 tons
56. Silk textiles	100 million meters
57. Lightbulbs	100 million units
58. Synthetic detergent	10,000 tons
59. Synthetic fatty acid for soap	tons
60. Soap	10,000 tons
61. Matches	10,000 units
62. Crude salt	10,000 tons
63. Sugar	"
64. Cigarettes	10,000 cases
65. Canned goods	10,000 tons
66. Leather	10,000 hides
67. Leather shoes	10,000 pairs
68. Rubber shoes	100 million pairs
69. Clothing	100 million items
70. Machine made paper and paper board	10,000 tons
71. Radios	10,000 units
72. Recorders	"
73. Television sets	"
74. Cameras	"
75. Bicycles	"
76. Sewing machines	"
77. Wristwatches	"

Note: Timber refers to the amount hauled out. Up until 1961 it was the output of logs; after 1962, it included small pieces of timber.

Nitrogen, phosphate, and potash content of chemical fertilizer is figured at 100 percent.

Electric power generating equipment includes water turbogenerators, steam turbogenerators, and gas turbogenerators over 500 kilowatts.

Yarn includes pure cotton yarn and cotton spun together with cotton-like pure chemical fiber yarn; it does not include cotton velvet, substitute fiber yarn and homespun yarn.

Cloth includes pure cotton cloth, mixed cotton cloth, pure chemical fiber cotton cloth and cotton canvas cloth. It does not include substitute fiber cloth, handspun cloth, or curtain cloth.

Silk does not include hand reeled silk.

Burlap bags includes pure burlap, burlap mixed with chemical fibers, pure chemical fibers, and substitute fiber raw material burlap bags. After 1981, it no longer included [5112 7910 7899] bags.

[bottom table]

1. Raw coal
2. Crude oil
3. Electricity output
4. Including: Hydropower

[key continued p 478]

[Table continued from p 475]

Item	1957	1965	1978	1980:	1981
5. 成 品 钢 材	391.5	831.1	2,083.0	2,562.3	2,518.9
6. 钢	396.3	905.9	2,354.1	2,749.6	2,637.0
7. 生 铁	307.8	558.0	1,802.6	1,969.9	1,770.5
8. 机 制 焦 炭	250.0	541.9	1,458.6	1,533.8	1,428.8
9. 木 材	226.0	322.6	418.6	434.6	400.8
10. 水 泥	239.9	571.3	2,281.1	2,792.3	2,952.8
11. 平 板 玻 璃	216.9	322.5	940.8	1,300.9	1,438.5
12. 硫 酸	332.6	1,231.6	3,478.9	4,022.6	4,108.9
13. 纯 碱	263.5	459.4	692.2	840.1	860.4
14. 烧 碱	250.6	703.8	2,075.9	2,434.2	2,434.2
15. 合 成 氨	402.6	3,905.3	31,144.7	39,405.3	39,034.2
16. 农 用 化 肥	387.2	4,425.6	22,289.7	31,592.3	31,769.2
17. 其中: 氮肥	330.8	2,659.0	19,587.2	25,623.1	25,274.4
18. 化 学 农 药	3,250.0	9,650.0	26,650.0	26,850.0	24,200.0
19. 塑 料	650.0	4,850.0	33,950.0	44,900.0	45,800.0
20. 轮 胎 外 胎	209.5	552.4	2,228.6	2,728.6	1,735.7
21. 矿 山 设 备	2,938.9	2,222.2	13,494.4	9,027.8	6,383.3
22. 冶 金 设 备	6,900.0	8,700.0	34,100.0	20,500.0	17,550.0
23. 化 工 设 备	720.0	3,420.0	6,750.0	6,980.0	5,460.0
24. 发 电 设 备	3,300.0	11,383.3	80,633.3	69,883.3	23,250.0
25. 交 流 电 动 机	228.1	632.8	4,992.2	4,015.6	3,321.9
26. 变 压 器	359.0	699.1	4,155.6	3,812.8	2,336.8
27. 泵	364.3	1,107.1	9,507.1	7,828.6	8,257.1
28. 金 属 切 削 机 床	204.4	289.1	1,337.2	975.2	748.9
29. 锻 压 设 备	263.6	681.8	3,409.1	4,400.0	4,690.9
30. 滚 动 轴 承	898.3	2,610.2	15,196.6	19,283.9	18,489.0
31. 内 燃 机	1,725.0	6,975.0	70,450.0	63,475.0	50,100.0
32. 机 车	835.0	730.0	2,605.0	2,560.0	1,990.0
33. 货 车	125.9	50.0	293.1	182.8	151.7
34. 客 车	7,566.7	2,666.7	13,066.7	16,700.0	19,316.7
35. 民 用 钢 质 船 舶	769.0	615.5	2,642.9	4,881.0	5,878.6
36. 纱	128.7	198.2	363.1	446.0	483.2
37. 布	131.9	164.0	288.0	351.7	372.6
38. 毛 巾	164.3	193.8	440.2	563.4	558.5
39. 袜 子	162.4	120.9	225.6	237.3	243.7
40. 毛 线	285.0	550.0	1,890.0	2,865.0	3,825.0
41. 呢 绒	429.6	1,002.4	2,100.5	2,386.5	2,673.3
42. 毛 毯	120.2	337.5	871.7	1,232.5	1,488.1
43. 丝	176.8	162.5	530.4	632.1	667.9
44. 丝 织 品	223.1	526.2	940.0	1,167.7	1,284.6
45. 灯 泡	265.4	738.5	2,919.2	3,638.5	3,715.4
46. 肥 皂	271.1	324.7	614.4	878.4	961.9
47. 火 柴	113.7	132.5	207.1	215.1	241.2
48. 原 盐	167.3	231.7	394.5	349.1	370.1

[table continued p 479]



Key: [continued from p 476]

5. Finished steel
6. Steel
7. Pig iron
8. Machine made coke
9. Lumber
10. Cement
11. Plate glass
12. Sulfuric acid
13. Sodium carbonate
14. Caustic soda
15. Synthetic ammonia
16. Agricultural chemical fertilizer
17. Including: Nitrogenous fertilizer
18. Chemical pesticides
19. Plastics
20. Tires
21. Mining equipment
22. Chemical industry equipment
23. Electric generating equipment
24. Alternating current motors
25. Transformers
26. Pumps
27. Metal cutting machine tools
28. Forging equipment
29. Roller bearings
30. Internal combustion engines
31. Locomotives
32. Freight cars
33. Passenger cars
34. Steel boats for civilian use
35. Yarn
36. Cloth
37. Towels
38. Trousers
39. Knitting wool
40. Woolen fabric
41. Blankets
42. Silk
43. Silk textiles
44. Lightbulbs
45. Soap
46. Matches
47. Crude salt

[key continued p 480]

[Table continued from p 477]

Item	1957	1965	1978	1980	1981
48. 糖	191.1	324.4	504.4	571.1	703.6
49. 卷 烟	168.3	180.4	446.0	573.6	643.0
50. 罐 头	494.4	974.4	3,904.8	4,572.8	5,474.4
51. 皮 革	289.7	216.1	807.0	1,256.1	1,398.8
52. 皮 鞋	210.8	150.7	837.8	1,312.1	1,686.7
53. 胶 鞋	216.7	416.7	633.3	683.3	716.7
54. 机制纸和纸板	245.9	467.6	1,186.5	1,445.9	1,459.5
55. 收 音 机	2,070.6	4,794.1	68,688.2	176,694.1	238,658.8

Comparison of Output of Major Industrial Products With Highest Pre-Liberation Output Year

Item	Units	(1) 解放前最高年		(2) 指数 (以解放前最高年为100)		
		Year	Output	1949	1952	1981
3. 原 煤	亿 吨	1942	0.62	51.6	106.5	10.0倍
4. 原 油	万 吨	1943	32	37.5	137.5	316.3倍
5. 发 电 量	亿 度	1941	60	71.7	121.7	51.6倍
6. 钢	万 吨	1943	92.3	17.1	146.3	38.6倍
7. 生 铁	万 吨	1943	180	13.9	107.2	19.0倍
8. 水 泥	万 吨	1942	229	28.8	124.9	36.7倍
9. 平 板 玻 璃	万标准箱	1941	129	83.7	165.1	23.8倍
10. 硫 酸	万 吨	1942	18.0	22.2	105.6	43.4倍
11. 纯 碱	万 吨	1940	10.3	85.4	186.4	16.0倍
12. 烧 碱	万 吨	1941	1.2	125.0	658.3	160.3倍
13. 金属切削机床	万 台	1941	0.54	29.6	253.7	19.1倍
14. 纱	万 吨	1933	44.5	73.5	147.4	7.1倍
15. 布	亿 米	1936	27.9	67.7	137.3	5.1倍
16. 火 柴	万 件	1937	860	78.1	105.9	2.6倍
17. 原 盐	万 吨	1943	392	76.3	126.3	4.7倍
18. 糖	万 吨	1936	41	48.8	109.8	7.7倍
19. 卷 烟	万 箱	1947	236	67.8	112.3	7.2倍

Labor Productivity Rate for All Employees in Independent Accounting Industrial Enterprises Under the System of Ownership by All the People (Figured at 1970 constant prices)

Year	(1) 全员劳动生产率 (元/人, 年)	(2) 指数 (以1952年为100)
1952	4,167	100
1957	6,336	152.1
1965	8,943	214.6
1978	11,085	266.0
1980	12,031	288.7
1981	11,815	283.5

注: 1981年全员劳动生产率按1980年不变价格计算为11,863元。

Key: [continued from p 478]

48. Sugar
49. Cigarettes
50. Canned goods
51. Leather
52. Leather shoes
53. Rubber shoes
54. Machine made paper and paper board
55. Radios

[center table]

1. Maximum pre-Liberation year	
2. Index (Maximum pre-Liberation year=100)	
3. Raw coal	100 million tons
4. Crude oil	10,000 tons
5. Electricity	100 million kwh
6. Steel	10,000 tons
7. Pig iron	"
8. Cement	"
9. Plate glass	10,000 standard cases
10. Sulfuric acid	10,000 "
11. Sodium carbonate	"
12. Caustic soda	"
13. Metal cutting machine tools	10,000 units
14. Yarn	10,000 tons
15. Cloth	100 million meters
16. Matches	10,000 units
17. Crude salt	10,000 tons
18. Sugar	"
19. Cigarettes	10,000 cases

[bottom table]

1. Labor productivity rate for all personnel (yuan per capita per year)
2. Index (1952=100)

Note: The labor productivity rate for all personnel in 1981 figured in terms of 1980 constant prices was 11,863 yuan.

Major Financial Indexes of Independent Accounting Industrial Enterprises  
Under the System of Ownership by All the People

Item	Unit	1952	1957	1965	1978	1980
1. 固定资产原值	亿 元	149.2	336.6	1,040.0	3,193.4	3,730.1
2. 资金总额	亿 元	147.1	331.8	1,037.3	3,273.0	3,663.7
3. 固定资产净值	亿 元	101.1	241.3	777.2	2,225.7	2,528.0
4. 定额流动资金	亿 元	46.0	90.5	260.1	1,047.3	1,135.7
5. 利润和税金	亿 元	37.4	115.1	309.2	790.7	907.1
6. 利 润	亿 元	28.3	79.5	217.0	508.8	585.5
7. 税 金	亿 元	9.1	35.6	92.2	281.9	321.6
8. 每百元固定资产原值实现利润	元	19.0	23.6	20.9	15.9	15.7
9. 每百元资金实现的利润	元	19.2	24.0	20.9	15.5	16.0
10. 每百元资金实现的利润和税金	元	25.4	34.7	29.8	24.2	24.8
11. 每百元工业总产值实现的利润	元	14.2	17.1	21.3	15.5	15.5
12. 每百元固定资产原值实现的产值	元	134	138	98	103	101
13. 每百元产值占用的流动资金	元	23.1	19.4	25.5	32.0	30.1

Length of Various Transportation Lines

Units: 10,000 kilometers

(1) 年 份	(2) 铁 路			公路通 (6) 车里程	内河通 (7) 航里程	(8) 民用航空航线里程		输油管 (11) 道里程
	(3) 营业里程	(4) 通车里程	(5) 总延展里程			合(9)计	(10) 其中: 国际航线	
1952	2.29	2.45	3.51	12.67	9.50	1.31	0.51	
1957	2.67	2.99	4.31	25.46	14.41	2.64	0.43	
1965	3.64	3.74	5.89	51.45	15.77	3.94	0.45	
1978	4.86	5.04	8.43	89.02	13.60	14.89	5.53	0.83
1980	4.99	5.19	8.83	88.82	10.78	31.99(19.17)	11.47(8.12)	0.87
1981	5.02	5.23	8.96	89.74	10.87	34.81	14.61	0.97

注: 民用航空航线里程, 1980、1981年包括航线之间的重复线段, 括号内数字和以前年份数字是不包括重复线段。

Numbers of Passengers Carried and Amount of Turnover

(1) 年 份	(2) 旅 客 运 输 量 (万人)				(7) 旅 客 周 转 量 (亿人公里)			
	铁(3)路	公(4)路	水(5)运	(6) 民用航空	铁(3)路	公(4)路	水(5)运	民用航空(6)
1952	16,352	4,559	3,605	2	201	23	25	
1957	31,262	23,772	8,780	7	361	88	46	1
1965	41,245	43,693	11,369	27	479	168	47	2
1978	80,729	149,229	23,042	231	1,091	521	101	28
1980	92,204	222,799	26,439	343	1,383	729	129	40
1981	95,220	261,559	27,584	401	1,473	839	138	50

Key:

[first table]

1. Original value of fixed assets	100 million yuan
2. Total capital	100 million yuan
3. Net value of fixed assets	100 million yuan
4. Circulating capital quota	100 million yuan
5. Profits and taxes	100 million yuan
6. Profits	100 million yuan
7. Taxes	100 million yuan
8. Profits realized per 100 yuan of original value of fixed assets	Yuan
9. Profits realized per 100 yuan of capital	Yuan
10. Profits realized and taxes per 100 yuan of capital	Yuan
11. Profits realized per 100 yuan of gross industrial output value	Yuan
12. Output value realized per 100 yuan of original value of fixed assets	Yuan
13. Amount of circulating capital required per 100 yuan of output value	Yuan

[second table]

1. Year
2. Railroads
3. Mileage in operation
4. Mileage open to through traffic
5. Total extended mileage
6. Highway mileage open to through traffic
7. Inland river mileage open to through traffic
8. Civil airline mileage
9. Total
10. International
11. Oil pipeline mileage

Note: Civil aviation route mileage for 1980 and 1981 included overlapping segments among routes. Figures within parentheses and figures for former years do not include overlapping routes

[third table]

1. Year
2. Number of passengers carried (10,000 persons)
3. Railroad
4. Highway
5. Water
6. Civil Air
7. Passenger turnover (100 million kilometers)

# Amount of Freight Transported and Volume of Turnover

年 (1) 份	总(2)计	(3) 铁 路	(4) 公 路	(5) 运		管 道 输 (8) 油(气)量	(9) 民用航空
				合 (6)计	其中(7) 远洋运输		
(10)运输量(万吨)							
1952	31,516	13,217	13,158	5,141	14		0.2
1957	80,365	27,421	37,505	15,438	60		1
1965	121,083	49,100	48,987	22,993	246		3
1978	248,946	110,119	85,182	43,292	3,659	10,347	6
1980	(240,506) 546,537	111,279	(76,017) 382,048	42,676	4,281	10,525	9
1981	(231,605) 524,174	107,673	(71,504) 364,073	41,490	4,153	10,929	9
(11)周转量(亿吨公里)							
1952	762	602	14	146	28		
1957	1,810	1,346	48	416	77		
1965	3,464	2,698	95	670	237		
1978	9,829	5,345	274	3,779	2,487	430	1
1980	(11,517) 12,026	5,717	(255) 764	5,053	3,530	491	1
1981	(11,616) 12,144	5,712	(253) 781	5,150	3,622	499	2

注: 1980、1981年公路货物运输量、周转量包括全社会运量,括号内数字和以前年份数字仅包括交通系统专业运输工具所完成的部分。铁路包括地方铁路。

## Indexes of Freight and Passenger Turnover (1952=100)

Year	Volume of freight turnover			Volume of passenger turnover		
	Railroad	Highway	Water	Railroad	Highway	Water
1952	100	100	100	100	100	100
1957	223.6	342.9	284.9	179.6	382.6	184.0
1965	448.2	678.6	458.9	238.3	730.4	188.0
1978	1,289.9	1,957.1	2,588.4	542.8	2,265.2	404.0
1980	949.7	1,821.4	3,461.0	688.1	3,169.6	516.0
1981	948.8	1,807.1	3,527.4	732.8	3,647.8	552.0

## Post and Telecommunications Service Volume

(1) 年 份	邮电业务总量 (2) (万 元)	函 (3) 件 (万 份)	报刊期发数 (4) (万 份)	电 (5) 报 (万 份)	长途电话 (6) (万 张)	市内电话 (7) (万 户)	农村电话 (8) (万 户)
1952	16,434	80,894	1,363	1,204	1,628	29.53	5.84
1957	29,368	164,054	3,264	1,533	2,090	46.45	20.00
1965	62,826	217,571	5,621	8,277	8,869	77.11	49.22
1978	116,517	283,545	11,250	12,748	18,574	119.15	73.39
1980	133,405	331,271	16,431	14,663	21,404	134.17	79.90
1981	140,204 <195,184>	338,760	18,124	15,937	22,049	142.64	79.45

注: 括号数字是按1980年不变价格计算的, 以前各年是按1970年不变价格计算的。

Key:

[top table]

1. Year
2. Total
3. Rail
4. Highway
5. Water transport
6. Total
7. Ocean
8. Amount of oil or gas transported by pipeline
9. Civil air
10. Volume carried (10,000 tons)
11. Volume of turnover (100 million kilometers)

Note: Volume transported and amount of turnover of goods shipped by highway during 1980 and 1981 includes volume transported for society as a whole. Figures in parentheses and figures for previous years include only that portion carried by special conveyances in the transportation system. Railroads include local railroads.

[bottom table]

1. Year
2. Total posts and telecommunications volume (10,000 yuan)
3. Letters (10,000 pieces)
4. Newspapers and periodicals (10,000 pieces)
5. Telegrams (10,000)
6. Long distance telephone calls (10,000)
7. In city telephone calls (10,000 households)
8. Rural telephone calls (10,000 households)

Note: Figures within parentheses are at 1980 constant prices; figures for previous years are at 1970 constant prices.

Capital Construction Under the System of Ownership by All the People

Item	Units	1952	1957	1965	1978	1980	1981
1. 一、基本建设新增固定资产	亿元	31.14	129.22	159.93	356.37	426.64	371.17
2. 二、基本建设投资总额	亿元	43.56	138.29	170.89	479.55	539.39	427.89
3. 1. 按资金来源分:							
4. 国家投资	亿元	37.11	126.45	154.37	395.93	280.61	207.60
5. 自筹投资	亿元	6.45	11.84	16.52	83.62	163.90	140.87
6. 2. 按投资费用分:							
7. 建筑安装	亿元	28.40	85.06	103.88	286.68	367.77	306.57
8. 设备工具仪器	亿元	11.07	45.85	55.07	158.27	131.77	81.37
9. 其 它	亿元	4.09	7.38	11.94	34.60	39.85	39.95
10. 3. 按工程用途分:							
11. 生产性建设	亿元	29.14	105.09	144.74	396.24	357.65	251.68
12. 非生产性建设	亿元	14.42	33.20	26.15	83.31	181.74	176.21
13. 其中: 住宅	亿元	4.48	12.82	9.43	37.54	107.76	109.23
14. 4. 按国民经济部门分:							
15. 工业	亿元	16.89	72.40	88.96	273.16	273.98	215.26
16. 轻工业	亿元	4.06	11.04	7.01	29.30	49.26	42.63
17. 重工业	亿元	12.83	61.36	81.95	243.86	224.72	172.63
18. 建筑业	亿元	0.89	4.62	4.11	8.82	11.22	9.21
19. 运输邮电	亿元	7.61	20.69	30.51	67.54	62.34	40.47
20. 农林水利气象	亿元	5.83	11.87	24.97	53.18	52.03	29.21
21. 商业、饮食业、服务业	亿元	1.20	3.72	4.63	15.18	31.26	28.01
22. 科研文教卫生	亿元	3.34	10.50	9.12	21.66	44.30	43.63
23. 城市公用事业	亿元	1.64	3.82	4.45	15.36	33.81	31.85
24. 地质勘探	亿元	0.68	3.02	0.74	11.61	3.12	2.50
25. 其 它	亿元	5.48	7.65	3.40	13.04	27.33	27.75
26. 三、大中型建设项目							
27. 施工项目	个	516 *	992	1,261	1,723	1,106	893
28. 全部建成投产项目	个	38 *	262	289	99	82	79
29. 四、竣工房屋建筑面积	万平方米	3,639 *	6,805	4,704	9,011	14,500	12,589
30. 其中: 住宅	万平方米	1,342 *	2,816	1,728	3,752	8,230	7,834

注: 本表不包括未列入基本建设计划的挖潜、革新、改造项目的投资。

带\*的是1953年数。

Gross Retail Sales of Social Commodities

Units: 100 million yuan

Item	1952	1957	1965	1978	1980	1981
1. 社会商品零售总额	276.8	474.2	670.3	1,558.6	2,140.0	2,350.0
2. 城 镇	125.6	238.4	338.9	748.2	950.3	1,026.0
3. 乡 村	151.2	235.8	331.4	810.4	1,189.7	1,324.0
4. 一、消费品零售额	262.7	441.6	590.1	1,264.9	1,794.0	2,002.5
5. 1. 按城乡分:						
6. 城 镇	125.6	238.4	338.9	748.2	950.3	1,026.0

[table continued p 487]



Key:

1.	1.	Newly added capital construction fixed assets	100 million yuan
2.	2.	Total investment in capital construction	"
3.	(1)	Divided by source of funds:	
4.		State investment	"
5.		Pooled funds investment	"
6.	(2)	Divided according to use:	
7.		Construction and installation	"
8.		Equipment, tools and instruments	"
9.		Other	"
10.	(3)	Divided by project use:	
11.		Construction for production	"
12.		Nonproductive construction	"
13.		Including: Housing	"
14.	(4)	Divided by national economic sectors:	
15.		Industry	"
16.		Light industry	"
17.		Heavy industry	"
18.		Construction industry	"
19.		Transportation, posts and telecommunications	"
20.		Farming, forestry, water conservancy, and meteorology	"
21.		Business, beverage industry, and service trades	"
22.		Scientific research, culture, education and health	"
23.		Urban public utilities	"
24.		Geological prospecting	"
25.		Other	"
26.	3.	Large and medium size construction projects	
27.		Construction projects	Individual
28.		Total number of projects completed and in production	"
29.	4.	Housing area on which construction completed	10,000 square meters
30.		Including: Dwellings	"

Note: This table does not include investments for the tapping of potential, for renovation, and for rebuilding not included in capital construction plans

An \* denotes 1953 figures

[bottom table]

1.	Total retail sales of social goods
2.	City and town
3.	Rural
4.	1. Total retail sales of consumer goods
5.	(1) Divided between cities and countryside:
6.	Cities and towns

[key continued p 488]

[Table continued from p 485]

Item	1952	1957	1965	1978	1980	1981
7. 乡 村	137.1	203.2	251.2	516.7	843.7	976.5
8. 2. 按对象分:						
9. 对居民的消费品零售额	237.9	395.3	537.1	1,121.2	1,608.0	1,798.5
10. 对社会集团的消费品零售额	24.8	46.3	53.0	143.7	186.0	204.0
11. 3. 按商品类别分:						
12. 食 品 类	148.3	241.0	327.1	655.8	918.1	1,022.3
13. 衣 着 类	50.8	82.6	112.5	278.5	413.7	463.0
14. 日用品类	39.5	65.3	68.7	156.3	231.8	264.4
15. 文教用品类	6.7	12.7	17.3	42.2	73.5	85.5
16. 书报杂志类	2.0	4.9	6.4	12.1	23.1	25.0
17. 中西药和医疗器材类	6.8	16.7	27.8	64.7	65.8	70.8
18. 燃 料 类	8.6	18.4	30.3	55.3	68.0	71.5
19. 二、农业生产资料零售额	14.1	32.6	80.2	293.7	346.0	347.5

注: 本表包括农民对非农业居民零售, 以下各表同。

# Indexes of Total Retail Sales for Social Commodities

Item	Index (1952=100)					1953~1981 年平均每年 (1) 增长%
	1957	1965	1978	1980	1981	
2. 社会商品零售总额	171.3	242.2	563.1	773.1	849.0	7.7
3. 城 镇	189.8	269.8	595.7	756.6	816.9	7.5
4. 乡 村	156.0	219.2	536.0	786.8	875.7	7.8
5. 一、消费品零售额	168.1	224.6	481.5	682.9	762.3	7.3
6. 1. 按城乡分						
7. 城 镇	189.8	269.8	595.7	756.8	816.9	7.5
8. 乡 村	148.2	183.2	376.9	615.4	712.3	7.0
9. 2. 按对象分						
10. 对居民的消费品零售额	166.2	225.8	471.3	675.9	756.0	7.2
11. 对社会集团的消费品零售额	186.7	213.7	579.4	750.0	822.6	7.5
12. 3. 按商品类别分						
13. 食 品 类	162.5	220.6	442.2	619.1	689.3	6.9
14. 衣 着 类	162.6	221.5	548.2	814.4	911.4	7.9
15. 日用品类	165.3	173.9	395.7	586.8	669.4	6.8
16. 文教用品类	189.6	258.2	629.9	1,097.0	1,276.1	9.2
17. 书报杂志类	245.0	320.0	605.0	1,155.0	1,250.0	9.1
18. 中西药和医疗器材类	245.6	40.8	951.5	967.6	1,041.2	8.4
19. 燃 料 类	214.0	352.3	643.0	790.7	831.4	7.6
20. 二、农业生产资料零售额	231.2	568.8	2,083.0	2,453.9	2,464.5	11.7

Key: [continued from p 486]

7. Villages
8. (2) Divided by users
9. Retail sales of consumer goods to residents
10. Retail sales of consumer goods to social groups
11. (3) Divided by category of goods
12. Food
13. Clothing
14. Items used in daily life
15. Items used for culture and education
16. Books, newspapers and magazines
17. Western and Chinese medicines and medicinal materials
18. Fuel
19. 2. Retail sales of agricultural means of production

Note: This table contains peasant retail sales to nonagricultural residents.  
The same applies to succeeding tables.

[second table]

1. 1953-1981 (Average annual percent increase)
2. Total retail sales of social goods
3. Cities and towns
4. Rural villages
5. 1. Total retail sales of consumer goods
6. (1) Divided by cities and villages
7. Cities and towns
8. Rural villages
9. (2) Divided by users
10. Retail sales of consumer goods to residents
11. Retail sales of consumer goods to social groups
12. (3) Divided by category of goods
13. Food
14. Clothing
15. Items used in daily life
16. Items used for culture and education
17. Books, newspapers and magazines
18. Western and Chinese medicines and medical materials
19. Fuel
20. 2. Retail sales of agricultural means of production

Volume of Retail Sales of Major Consumer Goods

Item	Units	1952	1957	1965	1978	1980	1981
1. 粮 食	万 吨	2,961.0	3,723.5	3,682.0	4,750.0	5,497.0	6,107.0
2. 食用植物油	万 吨	76.5	103.0	74.0	87.5	126.0	172.5
3. 猪 肉	万 吨	170.4	176.5	277.7	467.5	704.5	710.0
4. 鲜 蛋	万 吨	13.3	25.9	33.9	45.9	83.7	82.5
5. 水 产 品	万 吨	77.9	142.4	137.5	219.0	202.9	201.5
6. 食 糖	万 吨	47.1	87.9	112.2	315.6	363.5	395.0
7. 酒	万 吨	64.6	86.7	93.7	246.0	334.2	439.2
8. 茶 叶	万 吨	3.7	6.1	4.4	11.0	16.6	16.7
9. 布	亿 米	30.8	42.9	44.4	76.9	98.4	102.5
10. 呢 绒	万 米	362.6	709.4	2,444.0	8,097.9	14,221.0	17,000.0
11. 绸 缎	万 米	3,092.3	7,090.8	9,666.0	26,802.6	44,159.0	42,550.0
12. 针织内衣裤	万 件	2,900.4	20,253.6	23,199.6	69,535.5	96,676	107,592.6
13. 鞋	万 双	10,330.8	20,231.8	32,768.0	86,929.9	105,632.0	112,405.0
14. 其中: 皮鞋	万 双	1,356.7	1,942.1	1,422.0	10,022.0	16,924.0	18,055.0
15. 火 柴	万 件	816.0	1,100.0	1,266.0	1,784.4	2,134.0	2,364.0
16. 肥 皂	万 箱	630.0	1,165.0	1,357.0	3,204.2	4,043.0	4,700.0
17. 保 温 瓶	万 个	840.0	2,770.8	3,277.0	8,169.2	10,051.0	10,812.5
18. 缝 纫 机	万 架	10.0	25.1	89.7	439.8	665.0	926.6
19. 手 表	万 只	38.5	107.6	189.1	1,388.1	2,534.0	2,890.0
20. 自 行 车	万 辆	33.5	84.7	176.2	809.6	1,186.0	1,582.0
21. 收 音 机	万 架	2.0	26.4	83.6	1,388.9	2,722.0	3,074.9
22. 机 制 纸	万 吨	21.9	33.4	24.1	41.7	41.8	31.9
23. 煤 油	万 吨	19.3	47.5	69.8	97.4	98.8	115.5
24. 煤 炭	万 吨	2,361.1	5,413.4	7,500.0	10,063.0	12,574.0	13,388.8

注: 粮食是贸易粮; 食用植物油包括油料折油; 猪肉包括鲜、冻猪肉和肉制品; 鲜蛋包括鲜蛋、冻蛋和再制蛋; 水产品是干、鲜混合品; 布包括棉布、棉纱和化纤混纺布、化纤布; 针织内衣裤包括汗衫、背心、棉毛衫裤和卫生衫裤; 鞋包括皮鞋、胶鞋、布鞋和塑料鞋; 收音机包括电子管收音机和半导体收音机; 机制纸包括机制薄纸和机制板纸。

Index of Retail Volume of Major Consumer Goods (1952=100)

Item	1957	1965	1978	1980	1981
1. 粮 食	125.8	124.3	160.4	185.6	206.2
2. 食用植物油	134.6	96.7	114.4	164.7	225.5
3. 猪 肉	103.6	163.0	274.4	413.4	416.7
4. 鲜 蛋	196.2	256.8	345.1	634.1	625.0
5. 水 产 品	182.8	176.5	281.1	260.5	258.7
6. 食 糖	186.6	238.2	670.1	771.8	838.6
7. 酒	134.2	145.0	380.8	517.3	679.9
8. 茶 叶	164.9	118.9	297.3	448.6	451.4
9. 布	134.0	137.0	249.7	303.7	316.4
10. 呢 绒	195.6	674.0	2,233.3	3,922.0	4,688.4
11. 绸 缎	229.3	312.6	866.8	1,428.0	1,575.3

[table continued p 491]

Key:

[first table]

1.	Grain	10,000 tons
2.	Edible vegetable oil	"
3.	Pork	"
4.	Fresh eggs	"
5.	Aquatic products	"
6.	Sugar	"
7.	Alcoholic beverages	"
8.	Tea	"
9.	Cloth	100 million meters
10.	Woolen fabric	10,000 meters
11.	Silks and satins	"
12.	Knit underwear	10,000 items
13.	Shoes	10,000 pairs
14.	Including: leather shoes	"
15.	Matches	10,000 units
16.	Soap	10,000 cases
17.	Thermos bottles	10,000 units
18.	Sewing machines	"
19.	Wristwatches	"
20.	Bicycles	"
21.	Radios	"
22.	Machine made paper	10,000 tons
23.	Kerosene	"
24.	Coal	"

Note: Grain means trade grain. Edible vegetable oil includes oil-bearing crops converted to oil. Pork includes fresh and frozen pork as well as pork manufactures. Fresh eggs include fresh eggs, frozen eggs, and reconstituted eggs. Aquatic products is a mixture of dried and fresh produce. Cloth includes cotton cloth, cotton yarn, mixed chemical fiber and cotton cloth, and chemical fiber cloth. Knit underwear includes T-shirts, undershirts, knit cotton undershirts and underdrawers, and sweat shirts and trousers. Shoes include leather shoes, rubber shoes, cloth shoes, and plastic shoes. Radios include electron tube radios and transistor radios. Machine made paper includes machine made writing paper and machine made cardboard.

[second table]

1.	Grain
2.	Edible vegetable oil
3.	Pork
4.	Fresh eggs
5.	Aquatic products
6.	Sugar
7.	Alcoholic beverages
8.	Tea
9.	Cloth
10.	Woolen fabric
11.	Silks and satins

[Table continued from p 489]

Item	1957	1965	1978	1980	1981
12. 针织内衣裤	698.3	799.9	2,397.4	3,333.2	3,709.6
13. 鞋	195.8	317.2	841.5	1,022.5	1,088.1
14. 其中: 皮鞋	143.1	104.8	738.7	1,247.4	1,330.8
15. 火柴	134.8	155.1	218.7	261.5	289.7
16. 肥皂	184.9	215.4	508.6	641.7	746.0
17. 保温瓶	329.9	390.1	972.5	1,196.5	1,287.2
18. 缝纫机	251.0	897.0	4,398.0	6650.0	9,266.0
19. 手表	279.5	491.2	3,605.5	6,581.8	7,506.5
20. 自行车	252.8	526.0	2,416.7	3,540.3	4,722.4
21. 收音机	1,320.0	4,180.0	69,445.0	136,100.0	153,745.0
22. 机制纸	152.5	110.0	190.4	190.9	145.7
23. 煤油	246.1	361.7	504.7	511.9	598.4
24. 煤炭	229.3	317.6	426.2	532.5	567.1

Aggregate Price Indexes of Goods (1950=100)

(1) 年 份	零售物价	职工生活费用	农副产品收购	农村工业品零	(6) 工农业商品交换的综合比价指数	
	(2) 总 指 数	(3) 价 格 总 指 数	(4) 价 格 总 指 数	(5) 售 价 格 总 指 数	以农副产品收购价 (7) 格总指数为100	以农村工业品零售 (8) 价 格 总 指 数 为 100
1952	111.8	115.5	121.6	109.7	90.2	110.8
1957	121.3	126.6	146.2	112.1	76.7	130.4
1965	134.6	139.0	187.9	118.4	63.0	158.7
1978	135.9	144.7	217.4	109.8	50.5	198.0
1980	146.9	158.5	284.4	110.8	39.0	256.7
1981	150.4	162.5	301.2	111.9	37.2	269.2

Price Indexes (1950 price=100)

(Figured at State Owned Business List Prices)

(1) 年 份	(2) 零售牌价指数			按牌价计算 (6) 的职工生活 费用价格指数	农副产品 (7) 收购牌价 指数	农村工业 (8) 品零售价 格指数	(9) 工农业商品交换的综合比价指数	
	(3) 全 国	(4) 城 市	(5) 农 村				以农副产品收购 (10) 牌价指数为100	以农村工业品零售 (11) 价格指数为100
1952	112.1	114.2	110.4	115.3	121.6	109.7	90.3	110.8
1957	121.4	124.1	118.9	126.1	146.2	112.1	76.7	130.4
1965	132.3	134.5	130.5	134.7	185.1	118.4	64.0	156.3
1978	129.0	134.5	125.4	133.7	207.3	109.8	53.0	188.8
1980	136.7	143.6	132.1	142.1	251.2	110.8	44.1	226.7
1981	138.5	145.6	133.7	144.1	257.2	111.9	43.5	229.8

Key: [continued from p 490]

12. Knit underwear
13. Shoes
14. Including: Leather shoes
15. Matches
16. Soap
17. Thermos bottles
18. Sewing machines
19. Wristwatches
20. Bicycles
21. Radios
22. Machine made paper
23. Kerosene
24. Coal

[center table]

1. Year
2. General retail price index
3. General living expense price index for staff and workers
4. General price index for agricultural sideline product procurement
5. General price index for rural sales of industrial goods
6. Overall comparative price index for commercial exchange of farm and industrial products
7. When overall price index for agricultural sideline procurement is 100
8. When overall rural retail sale price index for industrial goods is 100

[bottom table]

1. Year
2. Retail list price index
3. National
4. City
5. Rural
6. Price index for living expenses of staff and workers figured at list prices
7. List price index for agricultural sideline product procurement
8. Index of rural retail prices for industrial goods
9. Overall comparative index for exchange of industrial and agricultural goods
10. When list price index for agricultural sideline procurement is 100
11. When general rural retail price for industrial goods is 100

State-owned Business Retail List Price Indexes by Category  
(1950 Prices=100)

Item	1952	1957	1965	1978	1980	1981
1. 总 指 数	112.1	121.4	132.3	129.0	136.7	138.5
2. 一、消费品	112.3	122.2	134.1	133.0	142.1	143.8
3. 1. 食品类	110.9	128.8	148.6	154.2	170.1	173.3
4. 粮 食	112.1	120.4	131.2	145.0	147.6	147.7
5. 鲜 菜	116.7	149.4	136.7	182.1	204.9	224.0
6. 副食品	110.3	138.8	168.4	168.0	199.2	203.8
7. 烟酒茶	111.8	127.0	152.3	151.5	153.3	158.2
8. 其 它	111.9	114.5	126.4	127.7	138.2	141.2
9. 2. 衣着类	111.9	111.7	113.6	112.9	112.3	111.9
10. 3. 日用品类	118.2	116.2	130.4	126.5	128.4	130.1
11. 4. 文化用品类	117.1	96.2	97.6	90.5	92.7	93.1
12. 5. 医药类	122.9	114.8	99.3	64.3	66.0	66.1
13. 6. 燃料类	135.9	150.3	160.1	154.1	154.7	155.6
14. 二、农业生产资料	108.2	110.8	114.7	100.1	101.5	103.2

State-owned Business Agricultural Sideline Products Procurement List  
Price Index by Categories (1950 Prices=100)

Item	1952	1957	1965	1978	1980	1981
1. 总 指 数	121.6	146.2	185.1	207.3	251.2	257.2
2. 一、粮 食	121.4	141.4	190.9	224.4	271.8	283.5
3. 二、经济作物	113.0	126.4	152.8	174.0	210.8	215.0
4. 1. 油 料	108.2	167.9	246.7	321.3	398.5	398.9
5. 2. 棉 花	113.3	111.1	122.9	138.8	179.0	179.0
6. 3. 麻	131.0	139.9	170.3	188.0	209.6	209.0
7. 4. 烟 叶	116.5	124.0	174.0	176.6	184.7	215.9
8. 5. 糖 料	87.2	102.9	135.3	151.5	189.3	197.1
9. 6. 茶 叶	154.7	241.6	304.1	330.4	365.1	371.3
10. 三、畜 产 品	105.7	145.5	192.1	201.8	255.8	258.6
11. 1. 肉 畜	102.7	142.9	193.2	200.2	255.3	256.1
12. 2. 禽 蛋	104.7	152.5	188.5	217.4	262.5	280.1
13. 3. 皮 张	136.8	150.2	163.1	182.6	229.9	240.2
14. 4. 鬃 毛	136.5	143.1	168.3	186.9	212.3	218.0
15. 四、其它农副产品	160.6	210.2	251.4	279.8	317.9	328.1
16. 1. 木 材	115.1	105.9	141.7	173.3	230.8	293.1
17. 2. 工业用油漆	103.9	132.1	214.9	275.1	319.5	318.2
18. 3. 蚕茧蚕丝	115.9	122.0	163.8	176.4	214.9	214.9
19. 4. 干鲜果	130.7	160.2	183.1	205.1	220.1	223.8
20. 5. 干鲜菜及调味品	179.0	237.2	235.0	259.3	302.7	317.2
21. 6. 药 材	136.7	222.3	297.2	272.0	279.7	283.1
22. 7. 土副产品	177.4	234.3	306.0	350.7	375.7	379.5
23. 8. 水 产 品	105.0	145.0	175.2	182.6	215.5	216.8



Key:

[top table]

1. General Index
2. 1. Consumer goods
3.     (1) Food
4.         Grain
5.         Fresh vegetables
6.         Nonstaple foods
7.         Tobacco, wine, and tea
8.         Other
9.     (2) Clothing
10.    (3) Daily necessities
11.    (4) Cultural items
12.    (5) Medicines
13.    (6) Fuel
14. 2. Means of agricultural production

[bottom table]

1. General index
2. 1. Grain
3. 2. Cash crops
4.     (1) Oil-bearing crops
5.     (2) Cotton
6.     (3) Jute and ambari hemp
7.     (4) Tobacco
8.     (5) Sugar
9.     (6) Tea
10. 3. Livestock products
11.    (1) Meat livestock
12.    (2) Poultry eggs
13.    (3) Hides
14.    (4) Bristles
15. 4. Other agricultural sideline products
16.    (1) Lumber
17.    (2) Industrial paint
18.    (3) Mulberry silkworm cocoon silk
19.    (4) Dried fruits
20.    (5) Dried vegetables and condiments
21.    (6) Medicinal herbs
22.    (7) Local sideline products
23.    (8) Aquatic products

# Total National Receipts and Disbursements

(1) 年 份	(2) 金 额 (亿元)			(6) 指数 (以1952年为100)	
	(3)总 收 入	(4)总 支 出	(5)收支差额	(7)总 收 入	(8)总 支 出
1952	183.7	176.0	7.7	100	100
1957	310.2	304.2	6.0	168.9	172.8
1965	473.3	466.3	7.0	257.6	264.9
1978	1,121.1	1,111.0	10.1	610.3	631.3
1980	1,085.2	1,212.7	-127.5	590.7	689.0
1981	1,064.3	1,089.7	-25.4	579.4	619.1

# National Urban and Rural Savings Deposits (year-end balance)

(1) 年 份	(2) 总 计 (亿元)	(3) 城 镇 储 蓄 (亿元)		农村社员储蓄 (6) (亿元)	平均每人储蓄 (7) 金额(元)
		合 (4) 计	(5) 其中: 定期储蓄		
1952	8.6	8.6	4.8		1.5
1957	35.2	27.9	19.6	7.3	5.4
1965	65.2	52.3	43.4	12.9	9.0
1978	210.6	154.9	128.9	55.7	22.0
1980	399.5	282.5	228.6	117.0	40.7
1981	523.7	354.1	289.4	169.6	52.6

# Residents' Average Annual Consumption Levels

年 (1) 份	(2) 居民消费水平(元, 按当年价格计算)			(6) 指 数 (按可比价格计算, 以1952年为100)		
	(3)全国居民	农 (4) 民	(5)非农业居民	(3)全国居民	农 (4) 民	(5)非农业居民
1952	76	62	148	100	100	100
1957	102	79	205	122.9	117.1	126.3
1965	125	100	237	132.4	124.8	136.8
1978	175	132	383	177.0	157.5	212.9
1980	227	173	468	206.6	184.4	237.6

注: 本表是按国民收入使用额中用于个人消费总额除以平均人口数计算。

# Basic Conditions of Family Life of Staff and Workers

Item	Units	1957	1964	1981
1. 一、平均每户家庭人口数	人	4.37	5.30	4.24
2. 二、平均每户就业人口数	人	1.33	1.56	2.39
3. 三、平均每一就业者负担人数 (包括就业者本人)	人	3.29	3.40	1.77
4. 四、平均每人每月全部收入	元	21.13	20.29	41.70
5. 五、平均每人每月生活费支出	元	18.50	18.39	38.08

注: 1. 1957年的资料是根据上半年27个大中城市的5,900多户全民所有制工业职工家庭和下半年32个大中城市的4,800多户全民所有制工业职工家庭的调查资料整理的。

2. 1964年的资料是40个大中小城市的3,537户全民所有制工业、商业、文教、机关团体的职工家庭的调查资料。

3. 1981年的资料是46个大中小城市各部门的8,715户全民所有制和集体所有制职工家庭的调查资料。

Key:

[first table]

1. Year
2. Funds (100 million yuan)
3. Gross receipts
4. Gross expenditures
5. Difference between receipts and expenditures
6. Index (1952=100)
7. Gross receipts
8. Gross expenditures

[second table]

1. Year
2. Total amount (100 million yuan)
3. City and town deposits (100 million yuan)
4. Total
5. Time deposits
6. Rural commune member deposits (100 million yuan)
7. Average per capita deposits (yuan)

[third table]

1. Year
2. Residents' consumption level (yuan. Figured at the year's prices)
3. All
4. Peasants
5. Nonpeasant
6. Index (figured at comparable prices: 1952=100)

Note: This table has been figured on the basis of the total amount of national income used for individual consumption divided by the average population.

[fourth table]

- |   |             |
|---|-------------|
| 1. Average number of people per family  | Individuals |
| 2. Average number of people employed per family   | "           |
| 3. Average number of people supported per employed person (including the employed person) |             |
| 4. Average total monthly income per person  | Yuan        |
| 5. Average monthly living expenses per person   | "           |

Note: 1. The 1957 data were compiled from survey data on more than 5,900 industrial staff and worker households under a system of ownership by all the people in 27 large and medium size cities during the first half of the year, and on more than 4,800 industrial staff and worker households under a system of ownership by all the people in 32 large and medium size cities during the second half of the year.

2. The 1964 data derived from survey data on 3,537 industrial, business, cultural and education, and official institution staff and worker households under a system of ownership by all the people in 40 large, medium and small cities.

3. The 1981 data derived from survey data on 8,715 staff and worker households under a system of ownership by all the people and collective ownership from all sectors of 46 large, medium and small cities

# Sampling of Rural People's Commune Household Income and Expenditures

## (1) Basic Circumstances of Households Surveyed

Item	Units	1978	1979	1980
1. 一、调查户数	户	6,095	10,282	15,914
2. 二、调查户常住人口	人	34,961	58,153	88,090
3. 三、平均每户常住人口	人	5.74	5.66	5.54
4. 四、平均每户整、半劳动力	人	2.27	2.38	2.45
5. 五、平均每—人口纯收入	元	133.57	160.17	191.33
6. 六、平均每人生活消费支出	元	116.06	134.51	162.21
7. 七、平均每个劳动力负担人口	人	2.53	2.38	2.26
8. 八、平均每户年末使用房屋间数	间	3.64	3.84	4.06
9. 九、平均每人年末使用房屋面积	平方米	10.17	11.03	11.59
10. 十、平均每户年内新建房屋间数	间	0.11	0.22	0.23

## (2) Commune Member Living Expenses

Item	Per capita average			Make-up (percent)		
	1978	1979	1980	1978	1979	1980
1. 生活消费支出合计	116.06	134.51	162.21	100.0	100.0	100.0
2. 1. 生活消费品支出	112.90	130.81	157.95	97.3	97.3	97.4
3. (1) 食 品	78.59	86.03	100.19	67.7	64.0	61.8
4. 其中: 主 食	51.33	55.36	60.56	44.2	41.2	37.3
5. 副 食	24.67	27.86	35.27	21.3	20.7	21.7
6. (2) 衣 着	14.74	17.64	19.99	12.7	13.1	12.3
7. (3) 燃 料	8.28	8.34	9.66	7.1	6.2	6.0
8. (4) 住 房	3.67	7.66	12.80	3.2	5.7	7.9
9. (5) 用品及其他	7.62	11.14	15.31	6.6	8.3	9.4
10. 2. 文化生活服务支出	3.16	3.70	4.26	2.7	2.7	2.6

## (3) Rural People's Commune Member Family Average Per Capita Expenditures

Item	Unit	1978	1979	1980
1. 粮 食 (原粮)	公斤	248	257	257
2. 蔬 菜	公斤	142	131	127
3. 食 油	公斤	1.97	2.38	2.49
4. 肉 类	公斤	5.76	6.51	7.75
5. 家 禽	公斤	0.25	0.32	0.66
6. 蛋 类	公斤	0.80	0.90	1.20
7. 鱼 虾	公斤	0.84	0.70	1.10

[table continued p 499]

Key:

[first table]

1. Number of households surveyed	Households
2. Number of permanent residents of surveyed households	Individuals
3. Average number of permanent residents per household	"
4. Average number of able-bodied and semi-able-bodied workers per household	"
5. Average net income per person	Yuan
6. Average living expenses per person	"
7. Average number of people supported per worker	Individuals
8. Average number of rooms per household in use at year-end	Rooms
9. Average housing area per person in use at year-end	Square meters
10. Average number of rooms per household built during the year	Rooms

[second table]

1. Total living expenses
2. 1. Living expenses
3. (1) Food
4. Staples
5. Nonstaples
6. (2) Clothing
7. (3) Fuel
8. (4) Housing
9. (5) Necessities and other
10. 2. Expenses for cultural-life services

[third table]

1. Grain (unprocessed food grain)	kilograms
2. Vegetables	kilograms
3. Edible oil	kilograms
4. Meat	kilograms
5. Poultry	kilograms
6. Eggs	kilograms
7. Fish and crustaceans	kilograms

[key continued p 500]

[Table continued from p 497]

Item	Unit	1978	1979	1980
8. 食 糖	公斤	0.73	0.80	1.06
9. 酒	公斤	1.22	1.42	1.89
10. 棉 布(包括成衣)	米	5.63	5.20	4.30
11. 棉 花	公斤	0.40	0.45	0.38
12. 化 纤 布	米	0.41	0.73	0.94
13. 呢 绒	米/百人	2.33	5.67	6.00
14. 绸 缎	米/百人	2.00	5.00	5.67
15. 毛线及毛线衣裤	公斤/百人	2.00	3.50	4.50
16. 胶鞋、球鞋、皮鞋	双	0.32	0.44	0.51

### Number of Students at Various Levels of Schooling

Unit: 10,000 people

(1) 年 份	(2) 合 计	(3) 高等学校	(4) 中 等 学 校			小(8)学
			(5)普通中学	(6)中等专业学校	(7)工农中学及职业中学	
1952	5,443.6	19.1	249.0	63.6	1.9	5,110.0
1957	7,180.5	44.1	628.1	77.8	2.2	6,428.3
1965	13,120.1	67.4	933.8	54.7	143.3	11,620.9
1978	21,346.8	85.6	6,548.3	88.9		14,624.0
1980	20,419.2	114.4	5,508.1	124.3	45.4	14,627.0
1981	19,475.3	127.9	4,859.6	106.9	48.1	14,332.8

注：中等学校不包括技工学校。

### Student-Teacher Ratio in Schools at All Levels

(1) 年 份	(2) 高 等 学 校		(5) 中 等 学 校		(6) 小 学	
	(3) 教师数(万人)	(4) 平均每个教师负担学生数(人)	(3) 教师数(万人)	(4) 平均每个教师负担学生数(人)	(3) 教师数(万人)	(4) 平均每个教师负担学生数(人)
1952	2.7	7.1	13.0	24.2	143.5	35.6
1957	7.0	6.3	29.3	24.2	188.4	34.1
1965	13.8	4.9	70.9	20.2	385.7	30.1
1978	20.6	4.2	328.1	20.2	522.6	28.0
1980	24.7	4.6	317.2	17.9	549.9	26.6
1981	25.0	5.1	300.9	16.7	558.0	25.7

Key: [continued from p 498]

8. Sugar	kilograms
9. Alcoholic beverages	"
10. Cotton cloth (including readymade clothes)	meters
11. Cotton	kilograms
12. Chemical fiber cloth	meters
13. Woolen fabric	meters per 100 people
14. Silks and satins	meters per 100 people
15. Knitting wool and wool clothing	kilograms per 100 people
16. Rubber shoes, sneakers, and leather shoes	pairs

[center table]

1. Year
2. Total
3. Institutions of higher learning
4. Middle school
5. Ordinary
6. Specialized
7. Industrial and farming plus vocational
8. Primary

Note: Middle schools do not include technical schools.

[bottom table]

1. Year
2. Institutions of higher learning
3. Number of teachers (10,000)
4. Average number of students per teacher (students)
5. Middle schools
6. Primary schools

Number of Medical Facilities and Number of Beds Nationwide

(1) 年 份	(2) 卫 生 机 构 数(个)		(5) 医 院 床 位 数(万张)			每千人人口医院 (8) 床位数 (张)
	合 (3) 计	其中(4) 医院	合 (3)计	其中(6)农村	农村占(7)全国合计%	
1952	38,987	3,540	16.0	3.9	24.3	0.28
1957	122,954	4,179	29.5	7.4	25.1	0.46
1965	224,266	42,711	76.6	30.8	40.2	1.06
1978	169,732	64,421	185.6	114.0	61.4	1.94
1980	180,553	65,450	198.2	121.4	61.3	2.02
1981	190,126	65,911	201.7	121.4	60.2	2.02

Development of Cultural and Broadcasting Facilities

Item	Unit	1957	1965	1978	1980	1981
1. 摄制故事影片	部	40	52	46	82	105
2. 译制故事影片	部	79	15	26	22	21
3. 电影放映单位	万个	1.00	2.04	11.6	12.5	13
4. 艺术表演团体	个	2,884	3,458	3,150	3,533	3,483
5. 文 化 馆	个	2,748	2,598	2,733	2,912	2,893
6. 公 共 图 书 馆	个	400	577	1,256	1,732	1,787
7. 博 物 馆	个	72	214	349	365	383
8. 广 播 电 台	座	61	87	93	106	114
9. 县、市有线广播站	个	1,698	2,365	2,553	2,610	2,643
10. 有线广播喇叭数	万只	94	873	11,212	9,857	9,145
11. 电 视 中 心 台	座		12	32	38	42
12. 千瓦以上电视发射台和转播站	座				246	265



Key:

[first table]

1. Year
2. Medical facilities (units)
3. Total
4. Hospitals
5. Hospital beds (10,000)
6. Rural
7. Rural as a percent of national total
8. Number of hospital beds per 1,000 population

[second table]

- |  |        |
|--|--------|
| 1. Story movies produced   | Units  |
| 2. Story films translated  | "      |
| 3. Movie projection units  | "      |
| 4. Artistic troupes  | "      |
| 5. Cultural centers  | "      |
| 6. Public libraries  | "      |
| 7. Museums   | "      |
| 8. Broadcasting stations   | "      |
| 9. County and municipal wire broadcasting stations                                   | "      |
| 10. Wired loudspeakers   | 10,000 |
| 11. Central television stations  | Units  |
| 12. Television and broadcasting stations and<br>relay stations above 1,000 kilowatts | "      |

# Total Import and Export Trade

Year	In terms of Renminbi (100 million yuan)			In terms of U.S. dollars (\$100 million)		
	Total	Exports	Imports	Total	Exports	Imports
1950	41.6	20.2	21.4	11.3	5.5	5.8
1951	59.5	24.2	35.3	19.6	7.6	12.0
1952	64.6	27.1	37.5	19.4	8.2	11.2
1953	80.9	34.8	46.1	23.7	10.2	13.5
1954	84.7	40.0	44.7	24.4	11.5	12.9
1955	109.8	48.7	61.1	31.4	14.1	17.3
1956	108.7	55.7	53.0	32.1	16.5	15.6
1957	104.5	54.5	50.0	31.1	16.0	15.1
1958	128.8	67.1	61.7	38.7	19.8	18.9
1959	149.3	78.1	71.2	43.8	22.6	21.2
1960	128.5	63.3	65.2	38.1	18.6	19.5
1961	90.8	47.8	43.0	29.4	14.9	14.5
1962	80.9	47.1	33.8	26.6	14.9	11.7
1963	85.7	50.0	35.7	29.2	16.5	12.7
1964	97.5	55.4	42.1	34.7	19.2	15.5
1965	118.4	63.1	55.3	42.5	22.3	20.2
1966	127.1	66.0	61.1	46.2	23.7	22.5
1967	112.2	58.8	53.4	41.6	21.4	20.2
1968	108.5	57.6	50.9	40.5	21.0	19.5
1969	107.0	59.8	47.2	40.3	22.0	18.3
1970	112.9	56.8	56.1	45.9	22.6	23.3
1971	120.9	68.5	52.4	48.5	26.4	22.1
1972	146.9	82.9	64.0	63.0	34.4	28.6
1973	220.5	116.9	103.6	109.8	58.2	51.6
1974	292.2	139.4	152.8	145.7	69.5	76.2
1975	290.4	143.0	147.4	147.5	72.6	74.9
1976	264.1	134.8	129.3	134.4	68.6	65.8
1977	272.5	139.7	132.8	148.0	75.9	72.1
1978	355.1	167.7	187.4	206.4	97.5	108.9
1979	454.6	211.7	242.9	293.3	136.6	156.7
1980	563.8	272.4	291.4	378.2	182.7	195.5
	(570.0)	(271.2)	(298.8)	(381.4)	(181.2)	(200.2)
1981	735.3	367.6	367.7	420.2	200.1	220.1

Note: Figures for 1950-1980 were provided by the former Ministry of Foreign Trade. 1980 figures in parentheses and 1981 figures are Customs statistics.

Import and Export Commodity Structure

年 份 (1)	(2) 出 口 商 品 额 构 成 (以出口总额为100)			(6) 进 口 商 品 额 构 成 (以进口总额为100)	
	(3) 工 矿 产 品	(4) 农 副 产 品 加 工 品	(5) 农 副 产 品	(7) 生 产 资 料	(8) 生 活 资 料
1950	9.3	33.2	57.5	83.4	16.6
1951	14.0	31.4	54.6	81.3	18.7
1952	17.9	22.8	59.3	89.4	10.6
1953	18.4	25.9	55.7	92.1	7.9
1954	24.0	27.7	48.3	92.3	7.7
1955	25.5	28.4	46.1	93.8	6.2
1956	26.1	31.3	42.6	91.5	8.5
1957	28.4	31.5	40.1	92.0	8.0
1958	27.5	37.0	35.5	93.1	6.9
1959	23.7	38.7	37.6	95.7	4.3
1960	26.7	42.3	31.0	95.4	4.6
1961	33.4	45.9	20.7	61.9	38.1
1962	34.7	45.9	19.4	55.2	44.8
1963	32.9	42.9	24.2	56.0	44.0
1964	32.9	39.1	28.0	55.5	44.5
1965	30.9	36.0	33.1	66.5	33.5
1966	26.6	37.5	35.9	72.2	27.8
1967	24.4	36.3	39.3	76.0	24.0
1968	21.8	38.2	40.0	77.2	22.8
1969	23.5	39.1	37.4	82.4	17.6
1970	25.6	37.7	36.7	82.7	17.3
1971	28.9	34.9	36.2	83.9	16.1
1972	27.7	41.0	31.3	79.4	20.6
1973	24.7	39.5	35.8	76.4	23.6
1974	33.8	29.8	36.4	75.7	24.3
1975	39.3	31.1	29.6	85.4	14.6
1976	38.9	32.7	28.4	86.8	13.2
1977	38.5	33.9	27.6	76.1	23.9
1978	37.4	35.0	27.6	81.4	18.6
1979	44.0	32.9	23.1	81.3	18.7
1980	51.8	29.5	18.7	78.9	21.1

注：工矿产品主要包括五金矿产、机械仪器、化工、西药、陶瓷、化纤及化纤制品等。农副产品加工品包括经过加工的粮油食品、纺织品、土畜产品、工艺品等；农副产品包括粮、棉、油、蛋、活畜禽、水产品、蔬菜干果、生漆、中药材等。

Key:

1. Year
2. Composition of Exports (Total volume being 100)
3. Products of industry and mines
4. Processed agricultural sideline products
5. Agricultural sideline products
6. Composition of imports (Total volume being 100)
7. Means of production
8. Means of livelihood

Note: Products of industry and mines consist primarily of metallic ore products, machinery and instruments, chemicals, Western medicines, ceramics, chemical fibers, and chemical fiber manufactures. Processed agricultural sideline products included processed grain and oil foods, textiles, native livestock products, and arts and crafts. Agricultural sideline products included grain, cotton, edible oil, eggs, livestock and poultry, aquatic products, vegetables and dry fruits, raw lacquer, and Chinese medicinal herbs.

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